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SYMPOSIUM ON MEDICAL AND PSYCHOLOGICAL ASPECTS OF FOOD AND COOKING. PART I.

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Optimal Nutrition of Infants and Children — I. NEWTON KUGELMASS

Food in the Armed Forces — RACHEL HUBBARD

Editorial: Aesculapius in the Kitchen — FELIX MARTI-IBAÑEZ

SPECIAL ARTICLE:

What I Have Learned in Life — MORRIS FISHBEIN

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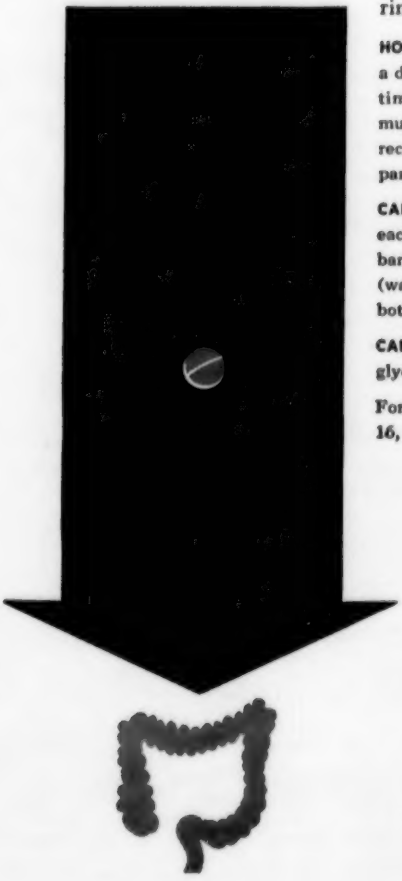

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SYMPOSIUM ON MEDICAL AND PSYCHOLOGICAL ASPECTS OF FOOD AND COOKING. PART I.

The Geography of Food and Cooking

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The medical geography of food and cooking is a vast and complex study, and in a short paper such as this it can only be broadly outlined. The aim of such a study is to discover what men eat and why they eat it. What makes them prepare their meals the way they do? What are the diseases caused by these diets and cooking habits?

The purpose of a diet is, of course, to supply enough energy for combustion and molecules essential for the repair of the wear and tear of the tissues. Men have now, and have had in the past, an infinite variety of ways to reach this purpose. Behind their diversified means there is a strong community of causes, which this paper will try summarily to bring to light.

Let us draw a few sketches to illustrate our meaning. A man waits behind a bush, armed with a sharp stone; another man comes by. The first one leaps and with a powerful blow strikes the second dead on the ground and begins to feed on the brain of his victim. After he has satisfied his hunger, he goes to the nearby river and drinks. The bone marrow he will eat later, and perhaps some of the lesser morsels he will bring to his wife and family, who are waiting for him in the cave.

Somewhere else on this primeval earth a family of naked people is eating berries, roots, grass, leaves, and fruit that they have gathered in the nearby forest.

In some other place a crowd is watching a man, who seems to be risking his life, perched on a floating log. He is fishing with a vegetable line in a way that has never been tried before. The crowd hails him as a hero.

A few thousand years later shepherds drive their herds to pasture. In the evening we see them gathered around a fire, drinking milk and roasting pieces of flesh from

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Part II of this Symposium will appear in the July issue.

one of their dead animals. They will also boil vegetables they have harvested from the ground in an earthenware pot. We can see that great progress has been made. These people have learned to domesticate wild animals and to put seeds in the ground to reap a harvest.

Still many thousands of years later the picture changes. Now we find a woman clad in a dress of fabric material, made up with rich cosmetics, opening a bright, white, shiny box with a hand whose nails glitter with red polish. From the box she takes out a container, which she opens with a little gadget. She pours the content of that container in an aluminum saucer and prepares her husband's dinner.

In each of these sketches we have shown man feeding on what he finds to eat—in each case the final stage in his search for food.

Let us now have a look at another series of small sketches. Suppose we are in a dusty valley of China. A skinny man falls on the ground. No-one will notice him, for many men are dying these days; locusts, pests, droughts, or floods have brought starvation to the land.

In the savanna of Africa three small Negro children are sitting in the dust. Their hair, instead of being kinky and black, is reddish, brittle, and silky. The children seem to be fat, but they are only swollen with edema. Their eyes have lost their brightness; the children are apathetic and do not play. We see a number of sores on various parts of their bodies, for they are suffering from a partial starvation: a disease called kwashiorkor, the result of a lack of animal protein in the diet.

Finally, let us evoke the spectacle of a well dressed middle-aged gentleman, who rides the elevator of a Park Avenue penthouse. We see him take a key from his pocket, enter the well furnished drawing room of a luxurious flat. A few moments later, he touches his chest with his hand and falls dead to the carpet. Diagnosis: a heart attack.

In each case—the dying man in China, the sick children in Africa, and the dead banker on Park Avenue—what we see is the final stage of a common cultural accident, the failure to provide adequate diet.

The medical geography of food and cooking is the study of the factors—inorganic, organic, and cultural—that influence the diets of mankind and the way these diets are prepared. Because these factors of climate, plant life, and the culture of men differ throughout the world, the resulting diets and the way they are prepared are not the same. Once we have understood all these factors we shall have gone a long way toward understanding what are the factors that govern the so-called deficiency diseases from which men suffer. But it is not only deficiency diseases with which we are concerned. There are an equivalent number of maladjustments that we could very rightfully ascribe to abundance and call the diseases of plenty. The geographic factors governing food and cooking govern in the long run the pattern of nutritional diseases: those that come from eating too little and those that come from eating too much.

The factors governing human diets can be listed as follows: (1) Men eat what they can get from the environment. (2) Given a choice they eat what their ancestors have eaten before them.

Men first eat what they can get, what the climate and the nature of the soil cause

to grow in the vegetable kingdom around them and to live in the animal kingdom in which eventually they will find a prey to kill.

The world can be divided into regions according to the food these regions produce. There is an area of wheat, rice, barley, and oats, which is coincident with the so-called temperate climates. There is an area of rice coincident with the well watered parts of the earth where the monsoons occur. In these regions the temperature seldom if ever goes below a certain level under which rice culture would not be possible. There is an area of millet and sorghum, manioc, yams, and cassava. There is an area of fish, extending along the shores of the lands bathed by the north Atlantic, along the shores of southeast Asia, and all around the Japanese archipelago. Other shores are less fertile. Fish do not inhabit the sea evenly. They condense and cluster in certain waters as land animals do on certain parts of the earth. There are areas of cattle and pigs, areas of sheep and goats, areas without them where men eat game and sometimes insects. All these areas are closely related to climate, to vegetable growth, and especially to the structure of animal societies. Where the tsetse fly abounds and finds its habitat there is no room for cattle. Many of these areas overlap, partly because of climatic conditions, partly because people make them overlap through the arts of culture and civilization.

This brings us to the second determinant of human diets: tradition. Food brings a feeling of security, and this feeling, so essential to survival, is enhanced when a diet tried and tested by one's parents is available. Conquerors establish themselves in a new region and always try to cultivate in that new region the foods they were accustomed to in their original land. In the northernmost island of Japan in Hokkaido, people are desperately trying to grow rice in a country that is not made for rice; Dr. Toynbee remarks: "For an immigrant Japanese farmer coming into Hokkaido not to grow rice is almost an infamy, and wherever there is even a remote possibility of getting rice out of the ground, rice is grown, in a country where normally wheat, barley, and oats would more easily grow."

Later, long after the conquest, the new settler will discover what the original inhabitants of the land used to eat. They will find that this food has value, and a new diet, a mixture of the imported and of the domestic one, will develop. When our forebears came to America they imported a number of agricultural habits. These have resulted in the diet of today being based on wheat and beef, but including native products like corn and sweet potatoes. Thus we see that the tastes of people are chiefly a result of education. What are tastes? There is a school of psychologists who feel that man, like the rat, has a sure instinct of what is good for his tissues, that he will eat what he needs, and that this will be the basis for the development of his tastes. It seems that still a larger school of psychologists disagrees with this. Even rats do not know with certainty what is good for them and choose the diet that is easy to get rather than the diet that fills their need. It is reasonable to assume that even if there is an instinctual drive in man toward the foods and molecules that are badly needed in tissues, this drive is covered by many trends, habits, and reflexes, stored in the ego and superego, and the instinctive "id" is completely drowned and superseded. These factors of climate, soil, vegetable and animal life, migrations, pooling, and segregation of certain groups in certain areas or valleys have resulted

in the dietetic pattern now prevailing throughout the world. Whether the French deserve their reputation as the best connoisseurs of food in the world or not, there are many ecologic reasons why they should be. Their country partakes in the advantages both of the temperate climates of the northern Atlantic Ocean with the warming streams that prevail and of the warmer climates of the Mediterranean Sea. This has resulted in making France a country of wheat, pasture, and dairies in the north, and a country of vineyards, olives, and vegetables in the south. In addition to these advantages, France has a long coast line along fertile seas. Her geographic position has also brought to France commerce with the spice countries. As a result a considerable variety of foods were at all times either grown on the land or brought to the country. From these foods the French chefs have concocted their many recipes. The French people have for a long time considered that the basis of their diet was the bread from their northern fields and the wine from their southern hills. The armies of Napoleon considered that bread and wine were the most essential things in the menu of a soldier: those that eventually govern his health and his ability to fight. In England, on the contrary, the climate did not lend itself to a variety of foods in the diet. It is no wonder that we find the British to be chiefly meat and fish eaters, with a great monotony in the vegetable diet and in the seasoning that accompanies these staple foods. With regard to drinking, since only the wealthy could afford the price of an imported bottle of wine, the stimulation of alcohol is represented in the British Isles by the hard liquor from the distillation of whatever grain the British soil would grow, especially barley.

If we turn to the Arab world, centered around the Middle Eastern countries, we also find that the diet reflects the way of life. The nomadic Arab traveling in the Desert as far as his camel will go will drink the milk of the camel and eat the fruit of the palm trees, which are the only things he has a chance to find on his way. If he comes in contact through brains or brawn with a more fortunate kinsman who owns some soil on which he grows wheat and barley, the nomad may either trade or pillage these products of a more stable living and implement his diet with porridge, gruel, and semolina.

The rice diets are correlated with a monsoon climate, a correlation so strong that it suggests an ancient and close relationship. Moreover, rice requires the work of a large number of people. Whether it is cultivated by broadcasting the seeds or by planting the nursery shoots, the number of people needed to produce one or two or, in some cases, three crops of rice a year is considerable. Every shoot of rice has been handled by at least one and probably more than one person and every grain of rice is the result of the efforts of many. Thus rice is the food for densely populated areas or for highly industrialized people who can replace the work of the arms by that of machines. This is what we have done in our culture. It is machines that produce the large harvests, the large crops. It is difficult at the present time to see how our kind of agricultural technique could be fitted in the social structure of the countries where rice is at present the staple food in the diet. There is a strange but striking correlation between rice areas and surplus populations. The industrialization of rice-growing countries may create large scale unemployment. As long as industry cannot absorb the labor force it might be hazardous to take away from the rice field a large

population who cannot work anywhere else. This problem has for the world at large considerable political and human implications.

Rice in itself has a rather flat taste. No food requires more spices to flavor it. In the same countries in which the inorganic and organic factors converge to make the culture of rice possible, they also converge to make possible the culture of a variety of spices that give rice flavor and taste. Pepper, chili, curry, cinnamon, and other ingredients are usually added to the dish of rice. As we have seen, where there is rice, there is water, and very often where there is water, there is fish. Thus the combination of rice and fish is created, which provides a balanced diet of animal protein and carbohydrates for one sixth of mankind.

The various regions of central Africa can be grouped in two broad types: the tropical, humid rain forest and the intermediate region between the jungle and the desert, which is commonly called the savanna. Conditions for producing things men can eat are different in each type. In the tropical rain forest we encounter one of the strangest contrasts in the world. In spite of the luxurious growth of vegetable matter, conditions for human survival are very poor. There is no arable land. Clearing the jungle to make some would be beyond the strength of the people settled there. It is in that part of the world that we still find cannibals.

There are four main types of diets in the jungle: the diets of the fisherman, of the hunter, of the tribes that are close enough and friendly enough with each other to exchange their products and live on a mixed diet of meat and fish, and the diet of those who neither hunt nor fish, but subsist on mushrooms and caterpillars.

The caterpillar season lasts approximately 60 days a year. The diet is completed by the usual porridge and vegetable fat. Some of these tribes have the foresight to smoke some of the caterpillars in advance. When no caterpillars are available, they feed on mushrooms, green leaves, roots, and oil. The caloric yield of a mushroom meal is 750. If caterpillars are added, it may rise to more than 2000. The gathering of mushrooms is quite a feature in the life of the Bolendas. After the rains the men of the tribe stake a claim on a piece of land where they expect a good crop of mushrooms and try to fence it in. After that, they rush back to their homes to get help for the actual gathering. When they return the claim has frequently been invaded and fights often result that may lead to manslaughter.

If we travel now in the savanna region of Africa we find that the soil is very poor and that only a limited number of things can grow without expensive agricultural improvement and technology. People living in these areas have a diet of sorghum, millet, cassava, and manioc, all containing rather poor vegetable protein. Some people practice animal husbandry. They consider their animals as capital, as signs of wealth, and it is with great diffidence that they will kill an animal for the purpose of eating its flesh. Usually they will wait until the animal dies from natural or unnatural causes, such as disease or accident. Then they invite neighbors to a feast at which the men gorge themselves until there is almost nothing left for the women. The savanna areas of Africa, both north and south of the equator are areas in which porridge, gruel, and mealy meal are eaten; in some rare instances, such as in the case of the Masai people, blood and milk from the cattle is made a part of the diet.

Turning now to the diets of the most civilized countries in the world, the United

States and Canada, we find that the same factors that prevail and govern the diets of the primitive tribesmen of Africa also prevail and govern the diets of these civilized people. North America is a country of great distances, of soil that needs considerable attention and care in order to be continually productive. It is also a country of great populations scattered over large territories. There is a vast communication problem. All this has resulted in pressing the people into mass production of their necessities and has spurred their inventiveness to give them the most advanced technology in the world. The skills needed for this mass production have been developed, and as a result, food in the United States and Canada is produced by machine, protected by machine, transported by machine, sold by machines in containers that are made by machines.

There is no longer any relationship between the family and the soil on which it lives. Farmers of Vermont eat grapefruit that have been grown in Florida; the people of Delaware eat the fruits of California. The tremendous yield of machines has resulted in surpluses, in overproduction. A great effort is being made now to try to absorb this overproduction, which in turn has resulted in campaigns of advertising to press the people of North America into overeating. Of course, this is to a certain degree offset by the efforts of the insurance companies and the medical profession to persuade people to watch their waistlines. In the same day the American citizen is exposed to the pressure of the dairy industry, asking him to drink two glasses of milk a day, of the meat industry, recommending steaks and frankfurters, of the cereal industry, pressing him to consume corn flakes for energy, and of many other producers of coffee, tea, beer, and soft drinks. As all this food has been heavily processed to stand storage and transportation, we are advised—probably wisely—to implement it with a large variety of vitamin pills.

All this has created a certain type of diet, which among many characteristics has that of being rich in animal protein, minerals, and fats. From the dietary standards that prevailed at the beginning of the twentieth century, such a diet seems more than satisfactory. We are beginning to learn, however, that in such a diet noxious elements conducive to degenerative diseases may occur. We begin to wonder whether trace chemical elements used for the protection of these large crops may not be harmful to certain cells in the human tissues. Some begin to wonder whether when we eat corn ripened in the fields, but preserved in a can, or drink oranges in frozen form we are not absorbing at the same time small amounts of substances that are not needed and are perhaps harmful to us. Beyond the diet just reviewed, there are many other dietary patterns popular in smaller areas. All are similarly inspired by factors of climate, soil, and tradition. Eventually these diets forced by circumstance have become the taste of the people.

Now that we have seen what men eat, let us discuss the factors that govern the way they prepare their food. What is the geography of cooking? It seems that man has always known the use of fire, but little is known of the early motives for cooking food. Was it found that food tastes better after being submitted to fire? Who taught how to boil, to fry, to broil? What led these people to watch with marveling eyes the transformations that occur when an egg is fried? All this is a mystery. It can be assumed that when men started blending various ingredients for flavor, they

realized that it was easier to blend flavors under heat than without heat. Man being inventive, once the idea of heating and blending was born there was no end to what it could lead to. It is also possible that in temperate and cold climates it was found to be easier, pleasanter to have food hot than to have it cold, or rapidly becoming cold after the flesh of the animal just killed had had time to take the temperature of the outside.

In order to prepare a cooked meal three things are necessary: tools, fuel, and invention. The cooking ways of the world are always governed by the presence or absence of one or all of these three factors, fuel probably being the most important.

In France, a country of forests, most of the cooking was done originally with wood. To the present day one finds experienced French cooks coming to the United States, absolutely refusing to adopt the electric stove or the electric range. They feel that they cannot master the heat of the cooking tool as well as if they have an old-fashioned stove in which they can put the amount of fuel needed to produce the heat desired. Later, when it was found that in France there were abundant reserves of coal, cooking was done with stoves fashioned to be fed coal. It is only recently that the coal has been transformed into electric power and that electric ranges have been adopted by a number of cooks.

In China the main fuel is cow dung and straw. Cakes are made from these two very valuable ingredients. This makes fuel very scarce in China because cow dung is more appreciated as fertilizer than as fuel and rice straw is used in the building of many a hut or a small house, creating competition for fuel ingredients. The result is that fuel is expensive and the housewife of China wants to use as little of it as necessary. This is probably the best reason for the Chinese taste of eating under-cooked vegetables.

In other areas we find that cakes and waffles of porridge and gruel are heated on a hot stone. Here the sun is used as fuel. In Eskimo and Lapp settlements cooking is done with fish oil. Thus, from Africa to the United States, from China to France, people do their cooking with the fuel that they have at their disposal and that eventually is cheapest.

Cooking is influenced by the tools available. In early times, before the days of pottery, men cooked in baskets or cloth that eventually was destroyed in the process. Later the baskets were lined with clay, which survived the fire in hardened form. Thus pottery was born. Some northern Nigerian tribes still prepare their cooking utensils in this way. Food being the most important pursuit of life, no wonder much time is devoted to it in certain places. We, on the contrary, seek speed in cooking. We want cooking tools that allow us to prepare our meals in the fastest possible way. There is no doubt that making precooked foods in an electric frying pan or a pressure cooker requires a very different arsenal of implements than preparing the boiled mealy meal of porridge of the South African woman, for whom there is no limiting time factor. Yet because it takes time, cooking is tedious; a majority of the native African women prepare meals only twice a week, and the family eats the food stale until none is left. Food is stored in containers usually made of earth or of hard wood, or even of straw.

In Asia cooking was done mostly in pottery. Now, under the pressure of Western

culture, cooking is done in pots and pans similar to ours. Cooking utensils used throughout the world are, like the food, governed by what is available and what tradition demands. Availability of material and propaganda are always the two main factors governing human choice. What people eat with is also governed by these factors. It is only very recently that the people of Western culture ceased eating with their fingers. In the days of Henry VIII or Louis XIV, days of great thoughts, arts, and poetry, it was quite customary to eat everything with one's fingers. The first forks must have looked pretentious long before they were accepted as useful.

Chopsticks are probably the oldest eating instrument devised by man. They are also one of the most convenient; since they have no stabbing or cutting edge, the cook preparing the meal must cut the food in advance in small bits that can be taken in the hold of the two chopsticks, then offered to the guests of honor by the host. Thus we see that an instrument used only for eating governs to a certain degree the way the cooking is done and how the food is presented on the table.

The spoon is an old tool. It was first made of horn and wood and was used by the civilizations of antiquity. Wooden spoons were common in the Middle Ages, but silver spoons were a rarity until the fifteenth century. In India a large part of the population uses banana leaves for dishes.

A variety of disease patterns result from this variety of foods and cooking methods. The previously mentioned Chinese farmer, the little African boy, and the American businessman have a lot in common. These three people, seemingly so different, are suffering from the same type of disease—a maladjustment of their tissues to their diets. The Chinese man lacks enough food to support the life of his tissues. The African boy lacks one specific type of protein; if this lack is not corrected he will die like the Chinese; even if it is corrected he may find himself later with an unusual susceptibility to such diseases as cancer of the liver. The Park Avenue banker is the victim of an excessive deposit of fatty molecules on the inner lining of his blood vessels.

Thus food and cooking govern the geographic distribution of many causes of deaths and also of disease patterns: there is an area of the diseases of rice, an area of the diseases of corn and maize, an area of the diseases of dairy products. Within these areas there are also a number of smaller areas where little peculiarities, due to the eating of certain foods or the absence of certain foods, are recognizable. The disease pattern of the rice areas is chiefly marked by beriberi, which is the result not so much of eating rice as of the way the rice is prepared. Beriberi is caused by the lack of thiamine in the diet, a vitamin found principally in the husks of the rice grain. It is chiefly the habit of eating polished rice that results in the spread of beriberi. In Indo-China there is more beriberi in the places where the rice is polished and hulled by machine than in the areas where the rice is eaten after hand preparation. In many countries—like Siam, Viet Nam, Cambodia, Burma, the Philippines—an enrichment program has been started where governments put back into the diet the essential factor that the local culture demanded be removed. The relationship between diet and disease can be extended still further. the way the food is grown exposes the grower to certain hazards. The culture of rice, which requires the presence in the rice fields of people who go barefooted in a mud heavily loaded with

human manure, is indirectly one of the reasons for the pattern of hookworm infestation in certain areas; the hookworm larvae penetrate the skin of the farmers as they prepare their fields for the planting of shoots. In the dairy areas we find a pattern of degenerative diseases, mainly heart disease or coronary thrombosis. In the corn areas pellagra abounds, and in the regions where starchy foods are given suddenly after the weaning of the child, kwashiorkor causes its damage.

Thus a careful geographer can map the climatic factors of heat and temperature, the physical factors such as soil permeability, the social factors of availability through technology or commerce, and the traditional factors of culture, showing how they have combined to produce certain diets and certain diseases. These are only the broad outlines and more specific relationships exist between certain foods and certain diseases. Trichinosis is common on the eastern coast of the United States, in Germany, and in certain parts of Europe where people eat pork that is undercooked and from pigs fed garbage instead of corn. This cultural and economic factor of feeding the pigs with garbage instead of corn results in the pork getting itself reinfected constantly and reinfecting man constantly. In Jewish and Moslem areas where pork is taboo the disease does not occur. The geography of the tapeworm is correlated with the geography of cattle and animal husbandry or with the geography of the fish that carry the fish tapeworm. In Somaliland and Ethiopia there is a belief that a man is worthy of the name only if he harbors a long tapeworm. The large intestinal fluke is found in Asia, in places where water caltrop is eaten raw. The eggs of the worm are voided in the feces, which may be deposited in water. There a larval form emerges that finds its way to a snail in which it grows until it erupts again and establishes itself on the water caltrop, which is part of the diet. Paragonimiasis, recognizable by spitting of blood, is the result of the consumption of a diet containing raw crayfish or crab. This is popular in many parts of the world, such as eastern Siberia, China, southeast Asia, the Philippines, some parts of India, the Belgian Congo, West Africa, Venezuela, Colombia, and some areas of Peru. The crayfish or crab is host to a larval form of a worm that eventually sheds its eggs in the sputum or feces of the host, whence they are again expelled into the outside world. In many parts of the world, such as southeast Asia, Indonesia, the southern part of India, many regions of Africa and South America, vitamin A is absent from the diet and this causes night blindness and keratomalacia. It is well known that goiter can be identified with diets lacking iodine. A careful study of a map of diets will show the same correlation that exists with the map of deficiency diseases.

From his food man gets his health and his diseases. He gets the molecules and the energy that he needs and also a number of foreign substances, either inorganic such as those he cannot advantageously metabolize or organic such as living agents of disease closely related to certain foods. As usual, human culture, which in this field is represented by the way the food is prepared and eaten, offers a mixed blessing. At times it deprives the food of essential particles; at other times it destroys noxious elements that may cause disease. The distribution of these various factors is subject to the influence of geography.

Optimal Nutrition of Infants and Children

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THE OPTIMAL DIET

The spectrum of nutriture in infants and children ranges from the zone of manifest deficiency to that of clinical excess with the zone of optimal nutrition somewhere between these two extremes. The past generation was concerned with deficiencies and excesses in nutrition, while the present era is devoted to optimal nutrition. Nutritional deficiency diseases have been almost eradicated from pediatric practice. Most feeding problems induced by chronic infection, pancreatic fibrosis, congenital anomaly, or maternal emotional instability have now been practically eliminated with improvement in the diagnostic criteria for these conditioned nutritional deficiencies.

Modern objectives in feeding infants and children tend toward individualization of an optimal diet for optimal health. Breast feeding is coming into the fore and the balanced regimen is being individualized in infant and child feeding practice. The increased use of processed, canned, and frozen foods for children favors the early introduction of solid foods but also enforces dependence on special products and the accompanying overprotectiveness conferred on members of the family living on special diets. The gradual adaptation of a balanced regimen for each meal requires a wholesome conditioning of the growing body to protective foods without continuous compulsiveness or scrutinizing supervision. The danger of inadequate intake in early childhood is gradually shifting to that of excessive intake during adolescence. Both extremes require meticulous intervention by the physician in the cause of optimal nutrition for optimal health for optimal maturation.

INFANT NUTRITION

Breast Feeding. Human milk is ideal for the baby, cow's milk for the calf. There is no substitute for breast milk. It supplies all nutrients for the early period except vitamin D, protects against deficiencies and infections, provides emotional satisfaction, and promotes immediate and ultimate well-being. The only contraindication is tuberculosis or other chronic illness of the mother.

An adequate supply of breast milk is dependent on the demand of the infant and on the willingness of the mother to nurse her baby. She requires a liberal and balanced diet including at least 1 quart of milk and vitamin supplements, especially C and D, during lactation. A normal infant requires 2½ ounces of breast milk (50 calories) per pound of body weight per day. Vitamins C and D should be provided from birth and thiamine and iron from 3 months of age.

Modern rooming-in procedures promote natural relationships, foster maternal nursing, and establish early paternal involvement. Breast feeding on a self-demand basis is ideal, but the prospective mother must be prepared for nursing her baby.

Twelve hours after birth, the baby is taken to the mother and she is informed of the technique of breast feeding. She should be advised of the baby's drowsiness for several days after birth, of its inability to nurse eagerly, of its trial and error attempts at nursing.

The baby should be allowed to nurse for a few minutes at each breast during the first few days to prevent irritation of the nipple before the milk comes in. Avoid probing, prodding, or spanking to encourage him to nurse. A baby nurses best when he awakens spontaneously. Let the mother hold her baby over the shoulder after each nursing and pat him to bring up swallowed air. Engorgement of the breasts does not mean copious lactation, and the only way to increase milk supply is by frequent and complete emptying of the breasts. Avoid complemental feedings until the second week of life.

The rhythm of feeding will not be established until the baby is brought home. He should not be fed every time he cries, but if he is hungry before three hour intervals he should be offered both breasts at a feeding, usually at the afternoon and evening nursings. If the baby continues to be hungry despite this procedure, offer a complementary feeding of 2 ounces of milk, 1 ounce of water, and a teaspoonful of Karo.

Artificial Feeding. Clinical and experimental studies reveal that a young infant requires a formula of 2 ounces of cow's milk (40 calories), a teaspoonful of sugar (15 calories), and ½ ounce of added water per pound of body weight per day. Every successful formula devised for infants yields about 20 per cent of the total calories in protein, 60 per cent in carbohydrate, and 20 per cent in fat.

Cow's milk must be reinforced with 5 to 10 per cent added carbohydrate (1) to provide protein-sparing effect, which permits protein anabolism instead of energy production, (2) to offer sufficient calories for tissue formation, (3) to ensure proper utilization of fat, (4) to maintain suitable acid-base relationship in the intestinal tract, and (5) to ensure greater weight gains. Omission of carbohydrates from the formula limits the percentage of carbohydrate calories to 28 per cent, considerably less than the optimal successful infant feeding. Infants maintained on milk without added sugar regain birth weight more slowly, show flatter weight curves until solid food is introduced, and have a smaller margin of safety against dehydration.

A sweet milk formula consists of 2 ounces of fresh milk or its equivalent per pound of expected body weight with added carbohydrate 5 to 10 per cent of the total quantity. Boiling and dilution render the formula more readily digestible. During the first month, fresh boiled cow's milk of low fat content is desirable. The extra calories are compensated for by the added carbohydrate.

An acid milk formula is a concentrated, easily digested mixture. A quart of milk should be acidified with 100 drops of U.S.P. lactic acid or 6 teaspoonfuls of lemon juice per quart. The milk is boiled and cooled and acid is added slowly with constant stirring. The same amount of sugar is added, but no water.

The carbohydrate of choice should be judged by several criteria—ease of digestion and absorption, degree of fermentation and irritation in the intestinal tract, cost, and availability. The mixed sugars, corn syrup (Karo), and Dextri-Maltose fulfill these criteria.

An infant will take 2 to 3 ounces more than his age in months. A young infant

TABLE I

Calculation Factors for Infant Formulas

Calories—45 to 55/lb. (100 to 120 cal./Kg.) for expected rather than actual weight
Fluid—2 to 2½ oz./lb. (130 to 165 cc./Kg.)
Formula—milk with 5 to 10 per cent sugar or sirup
Components of formula:
- Whole milk—1½ oz./lb. body weight
- Evaporated milk—1 oz./lb. body weight
- Dried milk—1 tbsp./2 oz. water
- Carbohydrate—1/10 oz./lb. body weight

Number of feedings:
- Birth to 4 weeks—6 feedings
- 4 to 6 weeks to 6 to 7 months—5 feedings
- 6 to 7 months to weaning—4 feedings

Volume of feedings:
- 1 to 3 months = age in months + 3 oz.
- 3 to 6 months = age in months + 2 oz.
- Never exceed 8 oz. at a feeding

demands 6 or 7 feedings per 24 hours and an older infant 4 or 5 feedings. Capacity for food gradually increases with age. An infant should be allowed to take as much as he demands every three or four hours without forcing prescribed amounts. The mother should not be concerned about the amount of formula left in the bottle. Remember that feeding problems arise from decreasing the number of bottle feedings too rapidly; when an infant's appetite is satisfied by infrequent bottle feedings, he has no desire to begin taking solid foods. (Tables I and II.)

The Infant's Diet. At birth nothing is offered by mouth for the first 12 hours to permit recovery from birth shock. Thereafter, offer prelacteal feedings of 5 per cent dextrose or preferably 2.5 per cent dextrose in 0.5 per cent sodium chloride (Kugelmass), at two hour intervals. Twenty-four hours after delivery the infant is put to the breast at eight hour intervals, on the first day at four hour intervals, and on the second day as previously indicated. A milk formula should be avoided until lactation has been established. A baby maintained on artificial feeding should be offered a dilute milk mixture, increased gradually according to tolerance 24 hours after delivery. The immediate needs are fluids and later, calories. The concentration of the feeding is gradually increased at two day intervals according to tolerance. (Table III.)

At 2 weeks vitamin C should be introduced in the form of strained orange juice, tangerine juice, grapefruit juice, or tomato juice, beginning with 1 teaspoonful and gradually increasing to 2 ounces/day. If there is a strong allergic tendency in the family, offer ascorbic acid, 25 mg. daily, dissolved in an ounce of water. Introduce vitamin D as cod liver oil, beginning with a few drops and gradually increasing to a teaspoonful twice daily by spoon. Again, if there is a strong allergic tendency in the family, offer 5 drops of Drisdol. It may be desirable to introduce gradually 15 drops daily of vitamin concentrate, e.g., ABDEC or Polyvisol.

TABLE II

Caloric Values of Milks, Milk Modifiers, and Formulas

Caloric values of milks	
1 oz. human milk	= 20 cal.
1 oz. whole cow's milk	= 20 cal.
1 oz. skimmed milk	= 12 cal.
Evaporated milk + an equal amount of water	= whole milk
1 oz. evaporated milk (cow's)	= 44 cal.
1 oz. evaporated milk (goat's)	= 38 cal.
1 oz. dried milk	= 140 cal.
1 oz. protein milk (dry)	= 144 cal.
Caloric values of milk modifiers	
1 oz. Karo syrup = 2 level tbsp.	= 120 cal.
1 oz. Dextri-Maltose = 4 level tbsp.	= 120 cal.
1 oz. Dexin = 6 tbsp.	= 115 cal.
1 oz. cane sugar = 2 tbsp.	= 120 cal.
1 oz. banana flakes	= 100 cal.
1 oz. Casec	= 105 cal.
Caloric values of formulas	
Whole cow's milk + 5 per cent sugar or syrup	= 25 cal./oz.
Whole cow's milk + 8 per cent sugar or syrup	= 30 cal./oz.
Whole cow's milk + 10 per cent sugar or syrup	= 32 cal./oz.

At 1 month concentrate the formula, increasing the milk by 1 ounce, diminishing water by 1 ounce or more depending on the baby's capacity. Introduce new fruit juices in midafternoon. If the baby is constipated, 1 ounce of prune juice may be given. If the baby's stools tend to be loose offer Apella solution, 1 tablespoonful to 8 ounces of water. (Table IV.)

At 2 months introduce the precooked, fortified, or whole grain cereals of wheat, oat, or rye, beginning with a tablespoonful at the 10 A.M. feeding and gradually increasing to 2 tablespoonfuls. A cereal may be offered again at the 6 P.M. feeding as extra calories for the night, but cereal is preferably a once-a-day food. (Table V.)

At 3 months introduce fresh or canned green vegetable purée beginning with 1 teaspoonful at the 2 P.M. feeding and gradually increasing to 2 or 3 ounces twice daily. Introduce strained cooked fruits—apricots, pears, prunes, or fresh banana whip—in teaspoonful amounts gradually increased to 2 tablespoonfuls once or twice

TABLE III

24 Hour Formula for Newborn Infant

	Whole milk	Evaporated milk	Acid milk	Dried milk
Milk	8 oz.	5 oz.	15 oz.	4½ tbsp.
Water	10 oz.	13 oz.	—	20 oz.
Sugar	½ oz.	½ oz.	½ oz.	½ oz.

TABLE IV

24 Hour Formula for 1 Month Old Infant

	Whole milk	Evaporated milk	Acid milk	Dried milk
Milk	12 oz.	6½ oz.	18 oz.	8 tbsp.
Water	12 oz.	17½ oz.	—	23 oz.
Sugar	1 oz.	1 oz.	1 oz.	1 oz.

daily. Introduce meat such as beef juice, liver and vegetable soup, liver and beef soup in 2 or 3 tablespoonful amounts. (Table VI.)

At 4 months new fruits and vegetables, puréed, may be introduced in gradually increasing amounts at the 7 P.M. feeding. Let the baby become accustomed to the taste and texture of new types of food at this exploratory hour. It is more important for the baby to learn to enjoy eating a new food than to consume any prescribed amount. New fruits may be fresh, canned, or dried. New vegetables include carrot, spinach, broccoli, beet greens, Swiss chard, and turnip greens. (Table VII.)

At 5 months introduce hard-boiled egg yolk at the 10 A.M. feeding in very small amounts and gradually increase to a whole egg yolk. If there is a definite family history of allergy, defer egg until a later date. If vomiting occurs repeatedly in the absence of such a history, the baby is probably allergic. Introduce new proteins such as soft custard, junket, gelatin, or Jello at the 2 P.M. feeding. Offer new vegetables at the 2 and 6 P.M. feedings, such as asparagus, collards, kohlrabi, rutabaga, celery, green beans, pumpkin, squash, turnip, and tomato. (Table VIII.)

At 6 months introduce sieved, scraped, or ground meat, such as beef, lamb, liver, or chicken, at the 2 P.M. feeding. Once a baby becomes adjusted to one kind of meat, offer another ground or freely divided to adapt him to new flavors and textures. Mix the meat with baked, boiled, or mashed potato or mix concentrated beef broth or beef soup with vegetables and meat stock. Offer new vegetables at the 2 and 6 P.M. feedings, e.g., artichokes, cauliflower, dandelion, leeks. Offer new fruits in raw form, e.g., scraped raw apple, apple juice, raw fresh pear, and ripe banana. (Table IX.)

At 7 months introduce solid foods in coarser form. Offer the fruits and vegetables mashed or chopped and the meats scraped. Introduce zwieback, dry toast, and crisp bacon at breakfast. Such a complete dietary calls for weaning from the bottle.

TABLE V

24 Hour Formula for 2 Month Old Infant

	Whole milk	Evaporated milk	Acid milk	Dried milk
Milk	16 oz.	8 oz.	21 oz.	9 tbsp.
Water	14 oz.	22 oz.	—	26 oz.
Sugar	1½ oz.	1½ oz.	1½ oz.	1½ oz.

TABLE VI

24 Hour Formula for 3 Month Old Infant

	Whole milk	Evaporated milk	Acid milk	Dried milk
Milk	20 oz.	10 oz.	24 oz.	11 tbsp.
Water	10 oz.	20 oz.	—	29 oz.
Sugar	1½ oz.	1½ oz.	1½ oz.	1½ oz.

TABLE VII

24 Hour Formula for 4 Month Old Infant

	Whole milk	Evaporated milk	Acid milk	Dried milk
Milk	25 oz.	12 oz.	28 oz.	12 tbsp.
Water	10 oz.	23 oz.	—	34 oz.
Sugar	1¾ oz.	1¾ oz.	1¾ oz.	1¾ oz.

TABLE VIII

24 Hour Formula for 5 Month Old Infant

	Whole milk	Evaporated milk	Acid milk	Dried milk
Milk	28 oz.	13 oz.	30 oz.	13 tbsp.
Water	7 oz.	22 oz.	—	34 oz.
Sugar	2 oz.	2 oz.	2 oz.	2 oz.

TABLE IX

24 Hour Formula for 6 Month Old Infant

	Whole milk	Evaporated milk	Acid milk	Dried milk
Milk	28 oz.	13 oz.	35 oz.	14 tbsp.
Water	7 oz.	22 oz.	—	34 oz.
Sugar	2 oz.	2 oz.	2 oz.	2 oz.

TABLE X

24 Hour Formula for 7 Month Old Infant

	Whole milk	Evaporated milk	Acid milk	Dried milk
Milk	32 oz.	15 oz.	35 oz.	15 oz.
Water	3 oz.	20 oz.	—	34 oz.
Sugar	1½ oz.	1½ oz.	1½ oz.	1½ oz.

TABLE XI

24 Hour Formula for 8 Month Old Infant

	Whole milk	Evaporated milk	Acid milk	Dried milk
Milk	32 oz.	15 oz.	35 oz.	16 oz.
Water	3 oz.	20 oz.	—	34 oz.
Sugar	1 oz.	1 oz.	1 oz.	1 oz.

Give the baby a cup of boiled milk instead of the bottle once daily. Replace gradually over a period of weeks until weaning is complete. (Table X.)

At 8 months the three-meal-a-day schedule should be introduced. Offer the family variants of foods—potato and butter, cottage cheese, ice cream. Likes and dislikes may indicate an allergic tendency but more often are inspired by the mother. New fruits include apples, pears, or other fruits not previously offered. New vegetables include Brussels sprouts, cabbage, mustard greens, onions, soybeans, and sauerkraut. (Table XI.)

At 1 year introduce complex but palatable foods. Fruits include fresh raw peaches, fresh raw apricots, cooked dried figs, grape juice, lemon juice, lime juice. Vegetables include dried legumes, sweet potatoes, yams. Meats and fish include minced chicken, steak and lamb chops, sieved fresh codfish, haddock, and halibut. Defer serving foods that are difficult to digest, e.g., berries, cantaloupe, cherries, grapes, rhubarb, corn, cabbage, cucumbers, radishes, fatty meats such as pork, veal, frankfurters, canned or dried fish, spices, e.g., pickles, olives, seasoned food. (Table XII.)

TABLE XII

Daily Diet for the Year Old Infant

Breakfast

Fruit, baked, stewed, or raw—3 oz.
Cooked cereal with light cream and a teaspoonful of Karo—3 oz.
Egg, soft, poached, or scrambled
Milk—1 glass
Toast with butter—1½ slice

Dinner

Ground meat—2 tbsp.
Mashed or baked potato—1 tbsp.
Vegetable—3 oz.
Milk with cocoa or Karo—1 glass
Toast with butter—½ slice

Supper

Milk soup (vegetable purée with milk and butter)
Cottage cheese, fish, ground liver, or viscera
Vegetable—3 oz.
Fruit, stewed—2 oz.
Milk—1 glass
Toast with butter—½ slice

Adequate Diets. There are many ways of prescribing a diet that fulfills all the child's requirements. To provide him with a variety of wholesome foods and allow self-selection is not altogether safe; to calculate his needs from selected foods is impractical; the qualitative approach places more faith in the child's biologic ability to satisfy his needs, and the quantitative method pays more attention to the food than to the individual. Between these extremes lies a clinical means of fulfilling an optimal regime. The child is given a basal ration that provides indispensable nutrients, all other foods being selected ad libitum for fulfillment of the total dietary requirement. The prescribed portion of the diet consists of protective foods rich in protein, vitamins, and minerals, fulfilling half the caloric needs, and the chosen portion of the diet invariably complements the limiting factors.

The basal ration applies to all children but the chosen portion of the diet should be adapted to the child's physique, food tolerance, daily activity, and local environment. Children of the linear type require relatively large amounts of food despite moderate gains in weight and should, therefore, be maintained on concentrated nutritious diets predominating in soft bland foods and having a minimum of coarse, irritating foods. These children should be offered more bread and butter, cereals and cream, cream soups, milk and eggs, and desserts such as blancmange, cereal puddings, and ice cream. Children of the lateral type require less food to make moderate gains in weight and should, therefore, be maintained on bulky foods of low caloric value that satisfy the appetite. These children should be offered fresh fruits, green or succulent vegetables, succulent meat, and less fatty, starchy, and high-caloric foods.

Choice of food depends on the individual's digestive capacity, the linear type being more sensitive than the lateral, unless either is constitutionally allergic. The child's food idiosyncrasies should be respected unless they involve indispensable nutrients, in which case skin testing for allergy should be resorted to and proper substitutes provided if necessary. Total food intake is finally determined by degree of activity, indoors and outdoors, climatic conditions, and a variety of other circumstances that must be evaluated in the individual case. The basal ration not only provides most of the essential nutrients but is also base-forming and indispensable for optimal growth and development and superior physical functioning. The foods added to fulfill the total daily needs must also be more of the base-forming than the acid-forming type so that the total nutrient intake may yield an alkaline residue.

Planned Meals. The fulfillment of the nutritional needs of the child rests largely on the mother's method of planning his three meals for the day. They should be arranged so that each type of food is represented at each feeding, for eating between meals is contraindicated. The meals should be interesting, well prepared, and served attractively if they are to appeal to the child's taste. Attention should be given to color combination, for colorless meals are uninteresting; to the flavors of the meal, with a bland food followed by something more tart; to the texture of the meal, a soft food to be counterbalanced by something crisp; to the temperature of the foods, a hot dish being followed by a cool but not an iced course; to the variety of foods, for monotonous repetition of a food on the same day is unappealing; to the

order of serving, so that stimulating foods are offered first and satiating foods last; to the sequence of nutrient value, so that protective foods are provided in the initial foods and the refined foods in the final serving.

Foods combined to make a meal are not matters of chance or convention, but the result of centuries of experience. Instinct guided man in selecting the foods that supplemented one another, and in determining the order in which they should be eaten to ease digestion and satiate appetite. The digestive role of each of the breakfast servings, for example, may be interpreted as follows: fruit is usually served first because it stimulates the flow of gastric juice and has little satiety value; cereal served next is a light food of some satiety value and it reaches the stomach before its secretory activity has attained a peak; eggs and milk make the greatest demands on the digestive powers of the stomach and are offered last, when the flow of gastric juice is greatest; buttered toast has a high satiety value, but requires little digestion in the stomach. This sequence thus has a physiologic basis in that the foods are properly handled by the stomach with an appropriate accompanying feeling of satiation.

Breakfast should consist of fruit, cereal, bread and butter, eggs or bacon, and milk. Fruit may be fresh, dried, or stewed, enriched with light cream, honey, Karo, or molasses. Cereal is buttered or creamed; egg prepared simply, but not fried; bacon cooked crisp; and fish substituted if neither egg nor bacon is tolerated. The more solid the food components, the more concentrated the nutrients and the greater the opportunity for replacing mushy foods by more solid forms that require mastication. Breakfast is thus not the customary carbohydrate meal for the child, but a balanced unit of the day's total nutrient needs.

Dinner is the child's largest meal, the main protein-purveying unit of the day. During cold weather it is offered in the middle of the day, but in the summer months preferably in the cool of the evening. Meat or some protein-rich food constitutes the main course accompanied by two leafy, root, or succulent vegetables and a potato or other starchy food. These combinations thus give appetizing contrasts as to color, form, and texture, besides providing essential nutrients in the diet. Salad is a useful course for introducing raw, crisp foods and for providing roughage when necessary. The meal may be enriched with cooked bone marrow scooped from longbones and added to the potato or rice. Dessert consists of fresh, dried, or stewed fruits, alone or enriched by light cream, honey, or Karo. Candy may be offered immediately after the meal, but not between meals. Appetizers, soups, relishes, and other stimulating accessories are unwarranted because they blunt appetite and decrease total food intake.

Supper holds the balance of power in the day's rations, its character being determined by the kind of breakfast and dinner offered. It should be a light meal, predominant in protective foods, particularly if their quota has not been fulfilled during the previous meals. Two vegetables or a vegetable and salad should be given with a small amount of a protein food, such as cream cheese, egg, bacon, or fish, and followed by fresh or stewed fruit and a glass of milk. Each of the components of the evening meal is chosen for simplicity and digestibility to prevent needless intestinal disturbance during the night, particularly in hypertonic or allergic children.

Feeding Prelude. Mealtime is an important event in the daily life of the child and should be preceded by a period of preparation. The child should attend to his toilet, wash his hands and face, comb his hair, and adjust his attire. Then there should be a short period of relaxation before eating when he actually does nothing, for overactivity, excitement, haste, and confusion interfere with proper digestion. This mealtime prelude helps the child adjust emotionally to part of the day's routine that may be less pleasurable to him than other activities. A physically and psychologically healthy child will show a noticeable eagerness for his food.

Self-Feeding. The young child develops a tremendous will for power, a great urge to act, and should be given every opportunity to assume mastery over his feeding. He will actually eat more when allowed to do what he can toward feeding himself. Until the predominance of one hand over the other affects the eating procedure, the child usually uses the spoon with either hand, eats with the other simultaneously, licks his fingers, runs his tongue around his mouth, and makes facial contortions that are distasteful in his maze of messiness. This should not deter the understanding mother from giving him full privileges in order that he may learn the art of self-feeding with her assistance. The child's task of handling several utensils at the same time may become exhausting at the expense of completing his meal. Utensils should therefore be suited to small hands and mouth, minimizing daily effort and obviating subsequent re-education. Management of the meal by the child himself can also be simplified by adapting the food to his muscular agility.

Isolated vs. Family Feeding. The preschool child is usually served by himself before the mealtime of the rest of the family. He learns manners for meals, sequence of foods, and technique of eating. The question of how early he should join the communal table depends entirely on the family situation. When the child is isolated, it is simpler to limit the diet to desirable nutrients without his being distracted by others at a table intended for adults. The child who has not joined the family table does not form the habit of asking to taste contraindicated foods. Once his appetite is tempted, he often loses the desire for simple servings, but if made to understand that elders require other foods than do youngsters, there will be less demand for forbidden foods.

Table talk should include topics that are of interest to the child but never pertaining to him or his feeding habits. If the child is well trained he will take his place appreciatively at the family table. Faulty habits of eating will become exaggerated in the presence of an older audience but the child must not be made self-conscious. He will learn to eat properly by example rather than by precept, and perfect table manners will not be acquired until the second decade, if ever. Parents should eat as they desire the child to eat, for they can influence the mealtime morale and direct it to wholesomeness of purpose. The mother must be confident of co-operation to secure results. If she approaches the child timidly he will sense her fearful attitude and live up to what is expected of him. If he refuses to eat despite the mother's expectant attitude, his plate should be removed without ceremony and no food given until the next meal hour.

Food Evasion. Children with capricious appetites resort to ingenious devices to avoid or delay eating disliked food. They eat very slowly, chew but do not swallow, dawdle at feeding, distract attention from eating, play with food, manifest silly behavior, leave the table to go to the toilet, and carry on in many other ways to evade the immediate task at hand. If this ingenuity is dissipated over a particular food, it is wise to make no issue of it, but to eliminate the food in question; if, however, it pertains to the main course or the meal as a whole, the preferred dessert should be omitted after a half hour or more is allowed to complete the meal. Thereafter no food should be given between meals and no issue made of the problem created by the child. Such situations rarely take place when the so-called finical eater joins other children at the nursery school, for together they soon learn that it is to their interest to attend to the business of eating without being influenced by any of the elders about them.

Food Prejudices. Dislike for food may appear early in childhood or may have been encouraged over a period of time as a result of physical or psychologic causes. The most common constitutional basis for refusing certain foods is allergy, usually inherited from both sides of the family if it becomes manifest in infancy. The child reacts as a biologic mechanism in resisting selected foods from the time they are first offered, alone or in combination with other foods. Any attempt to force the food, even in minute amounts, invariably induces some disturbance referable to the allergic state of the child—nausea, vomiting, abdominal pain, diarrhea, seborrhea, eczema, urticaria. The child may begin to refuse food when enlarged adenoids obstruct his nasal breathing. A postnasal drip of mucus interferes markedly with his appetite. Certainly there is no advantage in forcing food under these conditions. The anemic child lacks the tissue stimulus of the normal craving for food. The child who is habitually constipated is deprived of normal intestinal functions, with consequent loss of appetite.

The child who suffers from fatigue lacks the zest for taking the necessary amount of food. There are many physical bases for disturbed or depraved appetite. It is well to assume some such cause before resorting to extremes in feeding children. Dislike for certain foods must be respected, therefore, if the child's appetite is not to be inhibited or his well-being impaired. Other physical reasons for disliking foods are associated with properties of the food or with gustatory features of the child. The psychologic basis is the most common cause of development of pronounced and unjustifiable dislike of certain foods. It may be that an unpalatable food was served on a previous occasion and the child is conditioned to its refusal when served again. An emotional upset occurring during a meal may be the reason for refusing similar dishes when served again. Finally, imitation of adult likes and dislikes may be the unwitting cause of his refusal of specific foods.

Inculcated Attitudes. Members of the family should appreciate the indirect influence they exert on children at mealtime and must, if necessary, re-educate themselves to enjoy wholesome dishes abounding in protective foods. If these are offered with the attitude that they are expected to be consumed without question, the intangible message will reach the child without actual discussion. If, however, he learns that he can create a tense situation and gain an undue share of attention by

making an issue about a food, the emotional situation centering about himself tends to recur with each meal. The meal becomes a scene of coaxing, threatening, promising, bribing, and the like, to the digestive detriment of both child and parents. Under the circumstances it is preferable to omit a meal or two and reduce the child to semistarvation rather than submit to each emotional outburst. More effective is calm parental example where the child learns that it is to his advantage to eat food offered him without ceremony or parental concern. Once he is made to sense that his desires are being catered to, his purpose in eating is to please his palate rather than to fulfill bodily needs.

Negativistic Attitudes. A child's attitude toward a food may simulate that toward other things in his daily life and may in no way indicate a specific response to the food in the meal. Negativistic in attitude, he rebels against all authority, but will change if no attempt is made to force food on him. The less food offered him, the less concern expressed, the more wholesome is the meal and the sooner he resumes the proper attitude toward it. Frequently strangers can accomplish more than emotionally bound parents without resorting to undesirable methods for making him eat. There should be no prayers, bribes, rewards, or promises, for the more a spoiled child is offered, the greater his resistance. It is an endless game of heartlessness, for any effort to oversell the value of a food makes the child enjoy the challenge of refusal. He should be released completely from enforced authority, for the sooner he learns the disadvantages of his negativistic attitude, the sooner he returns to a sensible routine.

Mechanical Difficulties. The young child requires gradual adaptation to the various mechanisms essential in the preparation of foods for digestion. He usually finds difficulty in connection with eating, chewing, and swallowing to the extent that they may become fatiguing unless the appetite is at its keenest. The type of food offered should therefore be adapted to the gustatory capacity of the child, limiting the total amount of bulky food in the diet at any one time. The total provision of dried food at a meal should not be excessive, for dried food prolongs the duration of eating. On the other hand, the tendency to offer strained and soft foods beyond infancy is detrimental to the physical development of the masticatory muscles and dental structures. The eating utensils of the young child should be miniatures to make possible the proper maneuvers from plate to mouth without wasteful effort, with the help and encouragement of the mother.

ADULT INFLUENCE

Mealtime Atmosphere. Each meal should provide positive psychologic as well as nutritional values, the one making possible assimilation of the other. The psychologic elements wield a far-reaching influence on the child's receptivity to food. Proper psychologic values in a meal are contributed by cheerful, attractive, serene surroundings, simple servings, exclusion of distractions, and an unceremonious attitude toward the child. Conversation should be limited to pleasant topics without expecting the child to live up to adult standards of table behavior. It is more important that his attitude be pleasant toward his meals than that his utensils be held

in the prescribed manner, for many feeding problems are the consequence of associations formed at mealtime. The child should be allowed about 30 minutes for the meal so that he will not be tempted to eat hurriedly, and his stay should be treated in a matter of fact manner. Members of the family should avoid expressing likes and dislikes, for children are prone to imitate good and bad features alike.

Food Preferences. Adults have a strong tendency to pride themselves on their habits of life and insist on defending them regardless of their justification for existence, so that the child soon becomes convinced and is prone to accept food likes and dislikes. The young child has no decided preferences until taught the virtues of foods, for if left to his own devices he will eat things that would shock adults. At the table, the child is a mimic, quick to imitate his elders consciously or unconsciously, especially those of whom he is fond, and to adopt their habits, good and bad. Unless parents are willing to put aside their prejudices and adapt their diets to that of the child, proper provision should be made for him to eat by himself.

Feeding Supervision. The child should be served only food of definite biologic value, different in type and variety from day to day, and should see examples of proper eating by other members of the household. He should be accustomed from the start to the concept that suitable food is as necessary as suitable growth and that conformity to opinions of those in authority is for the best interests of all concerned. Judgment of the child's responses to food, however, must be tempered with common sense. His appetite varies normally from time to time and should be respected without comment. Indeed, any indication of refusal of food should be followed by diminishing subsequent feeding, even below his appetite, until body functions become normal. Certainly it is unnecessary for the child to receive the exact amount of calories and nutrients at each meal to the point of forcing it on him. Even if the intake of some nutrients is unfulfilled for a period of a week, health is maintained nevertheless with at least a normal attitude toward food. There is no need to acquire this increment of physical well-being at the expense of psychologic discord. The first instance of such mismanagement usually occurs with an acute illness, when the mother though perfectly aware of decreased tolerance for food at such times nevertheless urges the child to eat, thus initiating undesirable attitudes toward food and feeding. On the other hand, any tendency exhibited by the child to consume excessive amounts of food, dictated by cravings of an abnormal body build, should be deterred by limiting the size of servings, increasing the amount of low-caloric, high-satiety foods, and initiating pointed parental guidance.

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Food in the Armed Forces

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The objective of feeding within the Armed Forces is very similar to that of any type of institution or large quantity food program; that is, to provide well prepared, acceptable, and nutritious meals to our personnel as economically as possible. The accomplishment of this objective, however, is not as simple as the statement of it. Providing nourishment to their fighting men has long been a problem to nations. All have been cognizant of the need for adequate food supplies and of the disastrous effect a lack of provisions has on the morale, discipline, and physical condition of fighting men.

At the beginning of the Revolutionary War, the colonies fed their own militia. However, as the Army grew and took on a uniform character, the problem of feeding became both acute and difficult. The first Commissary General of Stores and Provisions was appointed shortly after George Washington was elected Commander-in-Chief. The components of the Army ration, which is the allowance of food for the subsistence of one person for one day, were first established by legislation on Nov. 4, 1775. This first ration provided the following components: 16 oz. beef, 16 oz. flour, 16 oz. milk, 1 qt. spruce beer, 6.8 oz. peas, 1.4 oz. rice, 0.1830 oz. soap, and 0.0686 oz. candle. In nutritional value, this ration, compared with our present dietary requirements, provided more calories, twice as much protein, and an adequate supply of all minerals and vitamins with the exception of vitamins A and C.

The peas, milk, rice, and spruce beer were deleted from the ration fed the soldiers in the War of 1812. Rum and salt were added and the meat and flour components were increased slightly. A decrease of calories and all nutrients was characteristic of this diet, which provided the following components: 20 oz. beef, 18 oz. flour, 1 gill rum, 1 gill vinegar, 0.64 oz. salt, 0.64 oz. soap, and 0.24 oz. candle.

The ration given the soldier in the Mexican War reflected considerable improvement. This ration provided the following components: 20 oz. beef, 18 oz. flour, 2.4 oz. dried beans, 0.16 gill vinegar, 1.92 oz. sugar, 0.64 oz. salt, 0.0686 oz. candle, 0.183 oz. soap, and 0.26 oz. green coffee. This ration provided more calories and a better supply of vitamins than the ration for the War of 1812. However, vitamins A and C were still lacking as they were in the other rations.

The ration fed during the Civil War was a great improvement and offered much more variety. The components of this ration were as follows: 20 oz. beef, 22 oz. flour, 7 oz. potatoes, 0.045 oz. yeast, 2.65 oz. dried beans, 1.6 oz. green coffee, 2.4 oz. sugar, 0.32 gill vinegar, 0.64 oz. salt, 0.04 oz. pepper, 0.64 oz. soap, and 0.24 oz. candle. The soldiers of the Civil War were comparatively well fed whenever supply lines were open and food was available. However, history indicates that these soldiers were often without food. With very minor changes, this Civil War ration was used during the Spanish American War.

TABLE I

Comparison of Nutritional Value of Ration Used during the Revolutionary War, Average Nutritional Value of the Current Air Force Ration, and Minimum Nutritional Requirements Recommended by the Air Force Surgeon General

	Revolutionary War ration	Present Air Force ration*	Minimum allowances recommended by Air Force Surgeon General†
Calories	4446	4394	3600
Protein, Gm.	197	137	100
Calcium, mg.	768	1182	700
Vitamin A, I. U.	1634	13,827	5000
Thiamine, mg.	4.05	2.52	1.6
Riboflavin, mg.	3.51	3.12	2.2
Niacin, mg.	44.20	29	16
Vitamin C, mg.	10	108	50

* Average of values from eight world-wide Air Force feeding groups.

† Amounts recommended in Air Force Regulation 160-95.

By World War I, the ration had been greatly improved by increasing the number of components to 17 and furnishing a substitution list to provide variety in the diet. Evaluated against current nutritional requirements, the World War I ration was deficient only in vitamin A.

Along with the evolution of the military ration, the supply system was also having growing pains. From the haphazard supplying of food during the Revolutionary War has evolved one of the most complex and extensive supply systems in the world. The Department of Army through its Office of the Quartermaster General supplies food to all our Armed Forces throughout the world. Since the food program of the military is only as good as its supply system, the two are very closely coordinated.

There have been continued improvements and research in the rations utilized by the Armed Forces. There is little resemblance between the field ration of today and the first ration used during the Revolutionary War. The field ration contains food items of the grocery store type with a maximum of perishable foods. This ration is utilized whenever and wherever there are an organized kitchen and refrigeration facilities available.

Table I shows the nutritional value of the ration used during the Revolutionary War compared with the average nutritional value of the current ration served within the Air Force and minimum nutritional requirements as recommended by the Air Force Surgeon General. A review of these nutritional values indicates that the caloric value is similar in all three groups, the protein value is lower in the current ration, and the vitamin A and C content is much higher in the current ration.

The type of ration fed the Armed Forces has changed considerably since the first one used during the Revolutionary War. The selection of the wide variety of items fed military personnel today is based on acceptability to the consumer, nutritional requirements, availability, supply capability, and cost. Our effective supply system

permits a varied diet of highly acceptable foods to be served to our personnel throughout the world.

However, ration research is never completed. Between World Wars I and II many packaged rations were developed; e.g., C ration and K ration. Utilization of these rations during World War II pointed up the need for changes and further research. It is true that field ration A is currently the most commonly used ration. However, there is always a requirement for reserve and emergency or "wartime" rations in the military. After all, the reason for the existence of the military is their ability to wage war. Therefore, it has been necessary to adapt the type of ration to meet requirements dictated by changes in weapons and in the concept of warfare. Feeding problems in long range high altitude jet bombers are quite different from those met in the World War II B-29. And too, the atomic-powered submarines present their own feeding problems.

There are certain points that must always be considered in the development of new rations or the improvement of existing rations. Is the nutrient content adequate? Will the ration be palatable? Is it acceptable to the military personnel? What will be its effect on general health and biochemical balance? Is there sufficient variety? Can it be packaged sturdily and compactly? Is it of minimum weight and bulk? Can it be transported, air-dropped if necessary? Is it stable under a broad range of climatic conditions? Answers to these questions guide research and determine ultimately what items will be included in the rations.

Military rations will constantly be in a state of change but the principles of planning will remain constant. Although history shows that this country has been able to win wars despite inadequate rations, it also shows that this inadequacy has done more than increase odds against victory. Primarily, it has put the military man under a greater strain than he should endure in operations.

Though the military must function with the impersonality of a machine, its efficiency is dependent on the ability of the individual soldiers. If they are poorly fed, not only is their ability to act impaired but their will to do so decreases proportionately. This is particularly true for a citizen Armed Forces, the kind that has always protected the United States in time of emergency. A man who has not chosen fighting as his profession does not become a better soldier if he receives too little food or distasteful and unfamiliar food.

Ration planning must find its way through two extremes: the best possible food available for the military and the most convenient, least complicated, least space-consuming, and least labor-consuming food. But our research people are finding answers to these problems. For this reason, it is believed that the American Armed Forces will always have the best fed personnel in the world.

EDITORIAL

Aesculapius in the Kitchen*

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The millenary empiricism of the cook and the modern knowledge of the dietitian have faced each other through the centuries. Today the physician is concerned with cooking both as a professional whose advice is sought by his patients and as a human being who relishes the pleasures of the table, for gastronomy is not totally irreconcilable with dietetics.

Cooking, like enjoyment of art, is tradition. That is why old countries, those along the Mediterranean, for instance, combine artistic feeling and superb cooking; while young countries, predominantly industrial and technological, are characterized by simplicity in their cooking. To be excited to emotional heights by artistic beauty or by exquisite food requires many centuries of apprenticeship. Few will deny that French cooking has always reigned supreme, followed by Italian and Spanish cooking. This type of cooking is more typical of countries characterized by a certain technological backwardness, which in turn enables them to concentrate on the culinary and other arts.

Brillat-Savarin emphasized the difference between the pleasures of eating and the pleasures of the *table*. The first entails only hunger and its appeasement; the second includes not only the food itself but its quality, how and where it is served, and with whom it is enjoyed. Eating merely satisfies the pangs of hunger; the *table* excites the appetite and combines—to borrow George Bernard Shaw's definition of matrimony—maximum temptation with maximum opportunity.

Italian and Spanish cooking cater to hunger, which like sex is a call of the instinct. French cooking caters to the appetite, which is a fine, intellectual "emotion" demanding more than merely eating. According to Brillat-Savarin, hunger is an instinct of animals; appetite, an attribute of humankind. Italian and Spanish cooking possess an empirical meaning and a natural flavor; French cooking is independent of hunger and is pure, marvelous artifice and *mise en scène*. Italian and Spanish cooking, which trust somewhat to chance, cannot compete with the artistico-scientific characteristics of the French cuisine; they are, however, far superior to the dinner without tablecloth, on counters, of industrial towns, or to the semisynthetic food of very young countries.

Physicians should take an interest in cooking and the pleasures of the table. Good cooking does more for home unity, to keep the man of the house and the entire family united, than the best television. Good cooking should bring out, not drown, the natural flavor of food, just as a dress should outline, not conceal, the graceful

* This is the complete version of an editorial published in *MD 1:7*, April, 1957.

lines of a woman's figure. Good cooking need not be insipid when it is "scientific." In every meal there is a factor as important as calories, vitamins, and amino acids—the psychological element. A good meal should leave us *psychologically* satisfied. This was easy when cooking, a long time ago, was a slow, leisurely art. It became impossible when man began to be transported at vertiginous speeds by new locomotive methods, forcing him to eat quickly food prepared even more quickly. To complicate matters, canning and refrigeration were invented, with the result that modern man, unlike his prehistoric ancestors, no longer chases after food. Food now chases man. For he can today have tropical papaya in the icy Arctic wastes and Scottish salmon in the sandy African plains. The kitchen has been defeated by the laboratory.

It is important to revive the old love for fine, gracious dining, today limited perhaps to transatlantic liners, which often offer the traveler all the marvels of international cooking, and to an occasional automobile trip that may unexpectedly lead to one of those old inns buried in the byways, effaced from the gastronomical map by the railroad, that other invention which years ago destroyed human contact with the landscape.

Cooking is a revealing key to the culture of a country. "National" dishes reflect a country's soul. The Spaniards' tendency to violence and their flair for bright colors are evident in their sharp-flavored, polychrome *paellas*—the watercolor of the Spanish kitchen—and their encyclopedic *cocidos*. The Japanese love for order and cleanliness is translated into those dainty miniature gardens that make up their favorite soups and dishes. The aseptic robustness and reserve of the British are transmuted into wholesome roast beef and Yorkshire pudding. The Scandinavian seafaring nature is reflected in their smorgasbords teeming with marine creatures. Gaelic subtlety finds expression in their delicate sauces; Italian earthiness in their *pastas*, seasoned with endearing onions, tinted with the scarlet of tomatoes, and crowned with the gracious touch of cheese. The American cuisine is assimilating in its melting pot the best of international cooking, just as it has assimilated all beverages in that often overpotent democratic fraternity of spirits, the cocktail.

Spanish cooking I know best. Consequently, I know its defects. But its excess of oil and garlic, its lethal rich sauces, its overuse of bread—all these are compensated by its rich variety, ranging from the cheese and chestnuts consumed by Don Quixote with the goat shepherds beneath the oaks of the Sierra Morena to the lavish extravagances prepared for Camacho's wedding. Spanish cooking has been for centuries basted by Mediterranean sunlight, breeding such exotic dishes as *arroz a banda*, rice cooked in concentrated fish and seafood broth, which imparts to every little grain all the essence of the Mediterranean sea; Andalusian *gazpacho;* trout and partridge *en escabeche;* and *turrón* of Arabian tradition, made with almonds, eggs, and honey. Spanish food demands the company of wines: sherry, dignified like an hidalgo; *amontillado*, solemn as a philosopher; manzanilla, gay like a dancing girl; and the *vinos de mesa*, which more than warm the stomach, and also tickle the heart.

The physician must be something of a gastronomer for his patients' and his own sake. Did not Hippocrates stress equally pleasure and wholesomeness in eating? An Italian glutton once said, "*Dello buono poco, ma questo poco abondante*" ("Of the

good just a little, but of this little in abundance"). The physician must perforce choose moderation in food, but why sacrifice quality and style?

No one can orient cooking as the physician can. He knows that taste and smell are functionally a unit. He knows therefore that it is better to replace the floral centerpiece—which finally makes the flowers smell of food and the food taste of flowers—by fruits, whose aroma does not interfere with that of food. The physician knows that the gourmet's instinct anticipated scientific knowledge by including in every meal butter, salad greens, cheese, and fruits, thus guaranteeing an ample ration of vitamins, proteins, and other basic nutritive factors. He knows that the fatigue of the hunt improves the quality of game flesh; that broiling meat carbonizes the fat and caramelizes its sugar content; that the preparation of mayonnaise involves electric forces that act upon the egg and oil suspension molecules; that the same difference exists between fried and boiled food as between an oil painting and a water color, the oil and water drying up in each case, leaving but the polychrome image of the cooked food.

The physician knows as well that a good meal should consist of *one* basic dish, preceded by two dishes to tone up the stomach and tantalize the palate, and followed by two dishes as a transition to the dessert. And he appreciates the value of wines, which do not anesthetize the palate as cocktails do, and which, just like very old people, should be kept for better preservation in a horizontal position. Wine should be poured in a wide-rimmed glass that it may be improved by the greater oxygenation, and the glass should be colorless that it may transmute the wine into a glowing gem to be lovingly looked at, smelled, "dreamt on," and talked about before it is drunk.

Above everything else, the physician realizes the importance to health of initiating a crusade—beginning in his own home and continuing with his patients—to cultivate not the habit of eating but the pleasures of the table. This crusade would revive the spiritual pleasures inherent in fine dining, such as leisure, courtesy, and graciousness in presentation and service, a pleasant atmosphere, and the music of feminine voices instead of the radio. A crusade to turn us into cosmopolites in our gastronomic tastes is the best way to develop brotherhood between men and nations. The physician, who has presided over many a banquet, from the days of Eriximacus at Plato's Symposium to our times, knows that an occasion of gracious commensality is also an occasion of true confraternity.

MD Publications' Technical Display at AMA Meeting

MD Publications, Inc., will be represented again this year at the 106th Annual Meeting of the American Medical Association, which will be held at the Coliseum, New York City, June 3 to 7. The display booth of MD Publications will feature: *MD*, medical newsmagazine; *Antibiotics Annual 1956–1957;* and six other journals of MD Publications—*Antibiotics & Chemotherapy*, *Antibiotic Medicine & Clinical Therapy*, *International Record of Medicine*, *Quarterly Review of Pediatrics*, *Journal of Clinical and Experimental Psychopathology & Quarterly Review of Psychiatry and Neurology*, *Quarterly Review of Surgery, Obstetrics and Gynecology*.

SPECIAL ARTICLE

What I Have Learned in Life

Morris Fishbein, M.D., *author of this article, studied at the University of Chicago, receiving his medical degree from Rush Medical College in 1912. At the time of his graduation, he received the Alumni Fellowship in Pathology and became associated with Drs. Ludvig Hektoen and E. R. LeCount in medical research. He also served as house physician in the Durand Hospital of the McCormick Institute for Infectious Diseases. In August 1913, he became assistant to Dr. George H. Simmons, editor of the* Journal of the American Medical Association, *which position he held up to 1924, when he was elected editor to succeed Dr. Simmons.*

Dr. Fishbein, who lives in Chicago, has made many significant contributions to medical and lay literature, including the Saturday Evening Post, Good Housekeeping, The Reader's Digest, *and the now defunct* Woman's Home Companion *and* Collier's. *He is author of* Medical Writing: The Technic and the Art *(third edition, 1950)*, Popular Medical Encyclopedia *(1956)*, Handy Home Medical Adviser *(1953)*, *and many other books for professional and lay readers, and he edited* New Advances in Medicine *(1956)*, Successful Marriage *(1955)*, Doctors at War *(1945)*, *and many other books.*

Dr. Fishbein is Consultant Medical Editor to Doubleday & Company and the Blakiston Company and Medical Editor of the Encyclopedia Britannica *and the* Britannica Book of the Year. *He is also Editor of the* Bulletin of the Society of Medical History of Chicago, *a member of the Board of Chief Editors of* Excerpta Medica, *and Contributing Editor to* Postgraduate Medicine. *He also holds two teaching positions and serves on a number of hospital boards and health committees.*

Assuming that the human mind at birth is a blank—although some of the Freudians insist that the brain has already accumulated many impressions—the memories begin to accumulate as one approaches three score years and ten. As I look back on my 67 years I find that there are far too many of these memories to be encompassed in the scope of an article for a periodical. I have begun an autobiography, which, I am sure, will reach to a good many hundreds of pages.

Much research has been devoted to the first memories of children and I have one

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This article is the second in a series of contributions by eminent physicians on "What I Have Learned in Life."

from around 3 or 4 years of age, but none of these early memories add considerably to learning although they do add up to experience. I doubt if any man is without some memories of his first encounters with the opposite sex, and he begins to learn right there and then.

I learned early to study, but most important of all, I learned early to read. My father had 6000 or 7000 books at home and I had access to the Indianapolis Public Library; at about the age of 12 I was reading 8 or 10 books each week. I read fiction, humor, history, adventure, science, travel, religion, and, in fact, almost anything. I was spared in those early days any close association with comic strips or comic books. The movies were just beginning. There was no radio or television, and reading filled every available niche of time. The habit has persisted and the number of books remains about the same. However, the periodical literature has grown and the number of lay and medical periodicals through which I wade each week is even to me unbelievable.

When I was 16 I went directly from high school into Indiana Medical College in Indianapolis, but after one month my father withdrew me on the advice of a friend who told him that medicine was no longer being taught that way and that one should have a university education first. I entered the University of Chicago, which fortunately began its session in October. I learned that a broad premedical education is a necessity for life if not for the study of medical science. In fact, I went to the university every summer to take courses in ethnology, anthropology, psychology, sociology, and literature and in these courses established habits of reading and study that cannot possibly be overestimated as to their value for a full life.

When I was 18 my father had what in those days was called a "nervous breakdown." From that I learned the value of what is called today "mental hygiene." I learned the danger of loss of temper, which is today called an "emotional upheaval." I learned not to shout in anger, and even my secretary, who has been with me more than a score of years, will affirm that I do not raise my voice in either instruction or correction. In fact, I learned tolerance. My friend of many years, Harrison Shoulders, once said that he had never known me to be intolerant of anything but stupidity.

I cannot say too much for the advantages of travel. If every educated and intelligent man or woman will only go to the other nations of the world, see the people, visit with them, eat with them, and try to understand them, we will be making the greatest progress toward international peace that can be made by our own efforts.

Early in my medical studies I became associated with Dr. Ludvig Hektoen, famed as a professor of pathology in the University of Chicago and Rush Medical College. He was a great teacher not only of pathology but also of clarity of expression in both writing and speaking. I was closely associated with him for three years and more or less intimately associated with him until he died at 89 years of age. This was a man who taught a score or more of young disciples, all of whom profited greatly by his example and by his teaching. Some 20 years after my graduation I made a survey of what had happened to the graduates of Indiana Medical College, Harvard Medical School, and Rush Medical College of the year 1912. This survey led to the conviction that the most important factor for success in medicine is early and intimate associa-

tion with leaders who have achieved distinction in either medical practice, teaching, or administration.

If anyone has read this far, he will realize that I am plucking at random from a life and a career that has been crowded with incident. In my work in medical organization I learned that a leader frequently inclines to get so far ahead of his followers that he loses them. Eventually he may become so impatient of them that he loses interest in leadership.

I have only rarely suffered from my own or other people's prejudices. I have learned that many who fail want to ascribe their failures to prejudice but those who are fit to advance are likely to advance regardless of prejudice.

Nothing rejuvenates a lagging mind like relaxation with culture. Here I define culture as including art, literature, music, eating, drinking, travel, reading, and all the finest things of life.

I like people. I like old people, young people, and most of all I like children. I have 11 grandchildren. I shall never tire of observing their development, and I am convinced that our immortality lies in our descendants.

Finally, the greatest satisfaction of life is being satisfied. Those who envy too many others, those who yearn for the unattainable, those who feel that they never had equal opportunity or a square deal will never have a satisfactory life. At the risk of being considered maudlin, I confess that just at this moment there popped into my mind a picture of a well known crooner singing "Count Your Blessings" on television. I have had so many that I could hardly begin counting them.

SYMPOSIUM ON MEDICINE AND WRITING

The Symposium on Medicine and Writing that appeared in the November 1956 issue of INTERNATIONAL RECORD OF MEDICINE has been published recently as a Monograph. The articles included in this Monograph are: "The Editing of a Modern Medical Textbook" by Russell L. Cecil; "Plain Talk and Clear Writing" by Morris Fishbein; "The Principles of Bibliographic Citation" by John F. Fulton; "The Art of Communication" by Joseph Garland; "On Writing a History of Medicine" by Douglas Guthrie; and "Minerva and Aesculapius: The Physician as Writer" by Félix Martí-Ibáñez.

This 72 page Monograph is sold for $3.00. As the fourth in the series of MD International Symposia, this book is the companion piece of *Medical Writing*, which was published in May 1956.

To obtain this monograph, write to MD Publications, Inc., 30 East 60th Street, New York 22, N. Y.

Medical Management of Ulcerative Colitis

*Jerome Weiss, M.D., F.A.C.G.**

NEW YORK, N. Y.

Although medical science has contributed to our knowledge about ulcerative colitis, it must be confessed that we are still "handicapped by our ignorance of the basic cause of the disease, by the lack of a specific curative drug and by the difficulty in evaluating therapeutic measures."[1] To emphasize our lack of understanding of this disease, medical literature contains a plethora of surmises, conjectures, and hypotheses relating to a possible etiologic factor or factors responsible for ulcerative colitis.

It has been stated that "cases of ulcerative colitis start their development early in life in the following sequence: failure to build up the intestinal immunities required, a series of departures of normal physiology of the colon, a biotoxic gut state causing micropathologies in the colon mucosa, the effects of different agents unstabilizing the bowel, secondary bacterial infection, and reinfection from the lymph structures."[2] This concept receives support from another source,[3] which states: "Ulcerative colitis originates in early childhood, although the pathological or pathophysiologic picture may not become evident until adolescent or adult life."

Because the disease presents some characteristics of a chronic form of bacterial dysentery, the concept of an infectious etiologic factor has been proposed. A diplostreptococcus isolated from cleansed bases of ulcers, which on intravenous injection into animals produced acute ulceration in the colon, was thought to be the specific etiologic factor.[4] This organism has been considered by some investigators to be nonspecific[2, 5, 6] since it is found in a wide variety of inflammatory diseases of the bowel. Still another organism has been proposed as an etiologic factor—*Bacterium necrophorum*[7]—but the consensus is that it is a saprophyte common to necrotic lesions and has no apparent significance in ulcerative colitis.

Lesions of the colon have been produced by parenterally administered *Bacterium coli*.[8] A strong positive case for a highly toxic hemolytic *Bact. coli* has been reported: "The high hemolytic character of the B. coli found in ulcerative colitis, as compared to normal or other intestinal states, gives this organism significance."[2] *Shigella dysenteriae* must not be slighted. According to a concept, supported to some extent by bacteriologic, immunologic, and epidemiologic evidence, ulcerative colitis may represent the end result of some specific infection, possibly dysenteric in its inception. It is suggested that this might represent the chronic stage of a specific dysentery in which the specific organism has died and has been replaced by secondary invaders such as the enterococcus and the colon bacillus.[9]

Has too much emphasis been placed on the concept of microbial etiology in ulcerative colitis? Has the patient been neglected to the extent that we have failed to consider the physiologic factors of the host that are concerned in the development of

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* Fellow, American College of Gastroenterology.

lesions and symptoms? It might be well for us to accept the conclusion that "the determinants of disease are not the same as the determinants of infection," and "to develop better techniques to prevent or at least correct the damage that they [microbial agents] cause,"[10] in order that progress toward the solution of the ulcerative colitis problem may be accelerated.

Lysozyme has been assigned a role in the pathogenesis of ulcerative colitis. Some evidence has been reported to show that an overproduction of lysozyme in a local area results in the removal of the protective mucus, making possible the necrotizing action of the indigenous bacteria on the mucosa.[11] It has been shown in a group of patients with acute ulcerative colitis that fecal lysozyme content was significantly elevated and that the lysozyme titer appeared to parallel the course of the disease, decreasing with remission and increasing with exacerbation, but it was concluded from evidence that lysozyme did not play a significant role in the pathogenesis of ulcerative colitis.[12] It has been strongly suggested that the mucous protection of the sigmoid and rectum is significantly lowered by lysozyme and that this lowered resistance of the mucous lining may allow tryptic digestion and invasion by bacteria apparently innocuous to a normally protected mucous lining.[3]

We would like to offer at this point our belief that the apparent overproduction of lysozyme may be the result of a reaction to some trauma and that it does not constitute an initiating factor in ulcerative colitis.

How much of a role do psychosomatic factors play in the pathogenesis of ulcerative colitis? Do they represent etiologic factors, or are the emotional features the result of the ulcerative colitis? If emotional influences are etiologically concerned, how can we answer the question, "If these emotional factors are etiologically concerned in the three diseases, why do they affect the stomach in some persons, cause mucous colitis in others, and in still others, as some believe, cause ulcerative colitis?" We accept the clinical observation that emotional factors are present in patients with ulcerative colitis; however, we believe these emotional factors are the result rather than the cause of the disease.

There are other causes suggested, such as dietary deficiencies, avitaminosis, and metabolic disturbances, to which some investigators have attached etiologic significance. When there is so much disagreement, and when such a variety and diversity of causes are advanced for a disease, we would be justified in rejecting them all. There is an old rule of medicine, to wit, "when there are so many causes advanced for a disease, none of them are right."

SYMPTOMATOLOGY

The presenting symptoms of ulcerative colitis are: (1) abdominal pain and griping; (2) diarrhea, which is often profuse, frequent, and bloody; (3) a high bacterial content in the stools; (4) weight loss—sometimes severe; (5) fever; (6) general malaise associated with anemia and malnutrition. The pathologic picture of ulcerative colitis is characterized by: (1) edema (engorgement); (2) areas bleeding readily on slight contact; (3) friable mucosa. "These could well be a reflection or the result of cholinergically induced smooth muscle spasm leading in turn to tissue ischemia and

hypoxia, thence to capillary permeability associated with the hypoxia and improper metabolism and function of mucosal tissues."[13]

Areas bleeding readily on slight contact bring us to the consideration of the capillary system. In evaluating the status of capillaries in patients with ulcerative colitis, capillary fragility was measured by means of a suction method. Different devices were used for the skin and for the mucous membranes of the mouth and rectum to determine the lowest pressure capable of producing some petechiae. In ulcerative colitis the capillary resistance was low, not only in the mucous membrane of the rectum, but also in the mucous membrane of the mouth and in the skin. It was so not only during attacks, but after and between attacks as well. This phenomenon was present in the quiet interval of this disease, in 35 per cent of cases in the skin, in 20 per cent of cases in the mouth, and in 85 per cent of cases in the rectum, and even when the proctoscopic appearances were normal. It is stated that lowered capillary resistance in ulcerative colitis cases is due to a systemic disorder of the blood vessels and suggests the importance of vascular lesions in the genesis of ulcerative colitis.[14]

DIAGNOSIS

The diagnosis is based on the following criteria: (1) history (detailed, including dietary); (2) physical examination (complete); (3) stool examination; (4) sigmoidoscopic examination; (5) barium enema; (6) special laboratory studies.

History. The age of the patient is significant. It must be emphasized that ulcerative colitis occurs in young people, predominantly between the ages of 14 and 30, while diarrhea in carcinoma and diverticulosis usually are found in patients beyond middle life.

Physical Examination. In chronic ulcerative colitis it is sometimes possible to palpate a stiff narrow segment of descending or pelvic colon. This is often difficult to differentiate from a segment of spastic irritable colon. Usually the colon is more tender in ulcerative colitis than in simple spasm, but if the spasm is associated with diverticulitis, the colon may possess the same characteristics on palpation.

Stool Examination. Sporadic bloody stools with tenesmus and griping, especially in the lower left quadrant, are characteristic of *chronic ulcerative colitis.* In the full-blown attack accompanying very active symptoms the discharge always contains some blood that is usually mixed with large amounts of pus and mucus. At times there may be the frequent appearance of bloody rectal discharges containing pus or mucus but no stool. There is no other colonic disease, except bacillary dysentery, that is associated with such a prolific purulent discharge. Pure mucus, without pus and unaccompanied by blood, is never found in pure ulcerative colitis.

Sigmoidoscopic Examination. In ulcerative colitis, the characteristic lesions begin in the rectum or rectosigmoid and can readily be seen through a sigmoidoscope. Early in the disease the membrane appears angry, hyperemic, and edematous and may be covered in scattered areas by an adherent exudate of mucopus and blood. Later the membrane is usually dotted with pin-point or large pitted ulcers and scars.

The *barium enema* not only confirms the presence of ulcerations, but also helps to

identify the extent of involvement of segments proximal to the sigmoid by revealing the shortening, narrowing, and distortion of the mucosal pattern of the colon.

It has been suggested that the physician can properly base his treatment on four observations easily made at the bedside:[15] (1) The colon is hyperactive. (2) The colon is the site of serious inflammation. (3) The patient is usually nutritionally depleted. (4) The patient is fearful, depressed, discouraged, and shows infantile traits in greater or lesser degree.

TREATMENT

Treatment must of necessity be distinctly individualized and symptomatic. When dealing with such indefinites as are found in ulcerative colitis, it is the physician's prerogative to develop his own system of thought to deal with the problem. The great variation in the extent of the disease and the emotional problems of the patient do not permit any specific course of therapy.

Essentially treatment must embrace the following categories: (1) rest; (2) antidiarrheal measures; (3) control of capillary permeability; (4) nutrition; (5) steroids and antibiotics.

Rest. A sound basis for treatment is rest, because it is essential as an aid in the restoration of physiologic equilibrium. Every effort should be made to dispel those factors responsible for apprehension and emotional conflicts. Rest in bed is desirable but not necessarily imperative. Definite periods of rest should be scheduled and adhered to by the patient. Social activities must be curtailed, and those responsibilities requiring strenuous effort should be eliminated.

Antidiarrheal Measures. It is our belief that the control of diarrhea represents the most important phase in the management of the patient with ulcerative colitis. Diarrhea in these patients results in incomplete digestion of food, excessive loss of nutrients, fluids, electrolytes, and minerals. This obviously leads to a state of malnutrition if permitted to go on uncontrolled.

Our best results in controlling diarrhea accrue from the use of a combination of polyamine anion exchange resin, synthetic sodium aluminum silicate, and synthetic magnesium aluminum silicate (Resion*); fortified with polymyxin and phthalylsulfacetamide, it is known as Resion P-M-S. Resion was reported to have the capacity to inhibit lysozyme,[16] to remove toxic amines,[17] to adsorb bacterial metabolites,[18] and to remove noxious agents comparable to shellfish poison.[19] Essential food factors, such as vitamins, minerals, and amino acids, were not removed.

The oral administration of polymyxin does not produce significant blood levels and has a rapid bacteriostatic action on most coliform bacteria and some cocci.[20] The polymyxins are a group of polypeptides produced by *Bacillus polymyxa*, with high bactericidal activity against gram-negative organisms. They are not significantly absorbed from the intestinal tract.[21, 22] Polymyxin was found to be the ideal treatment for *Shigella* infection in children.[23]

Sodium phthalylsulfacetamide is highly soluble at the physiologic *p*H range of the

* The trade name of National Drug Co. for a combination of polyamine anion exchange resin, synthetic sodium aluminum silicate and synthetic magnesium aluminum silicate is Resion.

intestinal tract. The oral administration of the drug yields a highly concentrated solution in the contents of the small and large bowel. Although absorption into the blood stream from the lumen of the gut is minimal, considerable amounts diffuse into the deeper strata of the intestinal wall. Findings indicate that the compound possesses many desirable properties of an intestinal antiseptic.[24]

Clinically, it has proved to be effective in reducing healing time in cases of surgery for hemorrhoids and other anorectal conditions. No postoperative infections, allergic reactions, or any untoward effects were reported.[25] Restoration to normal stools, disappearance of pain, reduction of gas in intestines, and return of roentgen and sigmoidoscopic findings to normal were reported in 65 per cent of 28 patients with ulcerative colitis.[26]

Capillary Resistance. As has been pointed out, capillary permeability and capillary fragility are increased in ulcerative colitis. It is our belief that greater therapeutic profits can be realized in the presence of normal capillary resistance. To correct any deficiency in capillary resistance, we prescribe bioflavonoids with vitamin C, 100 mg. of each per capsule, in a dosage of 4 to 8 capsules daily. When improvement becomes satisfactory, the dose is reduced to a maintenance dose of 3 capsules daily.

Nutrition. Rational management of ulcerative colitis must include optimum nutrition. We believe that an intact protein is a better supplement than the digested types of proteins such as amino acids. In severe cases whole blood transfusions may be indicated. In our regimen we like to use an intact protein concentrate preparation containing all the amino acids known to be necessary to maintain nitrogen balance. We also use a liver extract fortified with B_{12} as well as multiple vitamin preparations to supplement our nutrition program to correct any anemia that may exist.

Antibiotics and Sulfonamides. These drugs should be used with caution if they are used at all. Oral administration of antibiotics may cause severe damage, such as manifestations of hemorrhagic enteritis, and the eventual formation of resistant strains.[28] We have observed that antibiotics do present serious types of drug symptoms resulting in what we have named "antibiotic diarrhea."[27]

Average aerobic fecal bacterial counts seemed to rise consistently above control levels after varying periods of oral administration of penicillin, streptomycin, chlortetracycline, and chloramphenicol. A fecal bacterial flora resistant to penicillin, sulfonamides, streptomycin, chlortetracycline, and chloramphenicol develops more or less rapidly after continued administration of these drugs. A similarly resistant flora developed in normal persons given sulfaquinidine and oral doses of penicillin and chlortetracycline.[29]

A review of the literature on the relationship between antibiotics and nutrition revealed that the nutritive processes of the human organism are modified when subjected to the therapeutic action of antibiotics and that changes in the patient's nutritional state can affect the success of a chosen therapy.[30]

CONCLUSION

The physician strives for restoration of anatomic structure and normal physiologic functions, but these ideals can only be wishful thinking in cases of ulcerative colitis.

We can frequently free the patient of symptoms and bring about a remission, which are gratifying to the patient. Proper medical management, which depends on a good diagnosis and knowing which therapeutic procedure to select for each patient, will definitely limit the number of patients who might require surgery.

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Fifth Annual Symposium on Antibiotics

We are pleased to announce that the Fifth Annual Symposium on Antibiotics, sponsored by the Food and Drug Administration, Division of Antibiotics, U. S. Department of Health, Education, and Welfare, with the journals, Antibiotics & Chemotherapy and Antibiotic Medicine & Clinical Therapy, will be held on October 2, 3, and 4, 1957, at the Willard Hotel in Washington, D. C.

Submitted manuscripts must contain new, previously unpublished material. They must be typewritten, double spaced, on one side of 8½ by 11 inch paper. No more than six illustrations should accompany each manuscript. These glossy prints should be no larger than 8½ by 11 inches so that they can be clearly reproduced with a one third reduction. Bibliographies should conform to the style of the *Quarterly Cumulative Index Medicus*, published by the American Medical Association. Generic names of drugs should be used throughout the manuscript, except that the first time the drug is mentioned the trade name may be referred to in a footnote.

The original manuscript and one copy must be submitted by September 2, 1957. Five copies of an abstract of no more than 200 words must be submitted no later than August 19, 1957. Please submit manuscripts to:

Dr. Henry Welch, Director
Division of Antibiotics
Food and Drug Administration
U. S. Department of Health, Education, and Welfare
Washington 25, D. C.

In Memoriam

Henry E. Sigerist, M.D.

Greatness in a man can be evaluated by the scope of his endeavors. The greatness of Dr. Henry Sigerist, beloved friend, colleague, teacher, and spiritual guide to so many physicians throughout the world, lay not only in his many achievements but above all in the endless multiplicity and the pure idealism of his endeavors. We are still too close to his death to be able to write an appreciation of this great and always-to-be-missed friend with the requisite minimum of objectivity. We can now only enumerate some of his achievements, leaving for a future chronicle the presentation of the majestic mural of his humanistic endeavors.

Anyone who knew Dr. Sigerist, no matter how briefly, was captivated by his personality. His science was equaled only by his conscience, his wisdom by his charm. His mind was a vast empire of encyclopedic and well organized knowledge, his soul an enchanted kingdom, warmed by the blazing light of his imagination and generosity. He chose to live deep *instead of fast. His memory will live forever in the hearts of all his pupils who were blessed by his friendship, his teachings, and his writings.*—F. Martí-Ibáñez, M.D.

Henry E. Sigerist, M.D., world-renowned medical historian, died March 17 in his home in Pura, Ticino, Switzerland, at the age of 65. The teaching, writing, and exemplary dedication to the fields of historical and cultural medicine of this great man have influenced physicians, historians, and sociologists the world over.

Born in Paris in 1891 of Swiss parents, and educated in France and Switzerland, Dr. Sigerist had early exhibited an interest in the study of languages, and he went on to study Oriental languages in Zürich and London, turning to the study of medicine at the Universities of Zürich and Munich. As Privatdozent of the History of Medicine at the University of Zürich, he was called at the age of 33 to Leipzig to succeed Karl Sudhoff and to direct what was at that time the best institute of the history of medicine and which was the first of its kind in the world.

At the invitation of Johns Hopkins University, Dr. Sigerist came to America in 1932 to succeed Dr. William H. Welch and to head the newly created institute of the History of Medicine. In that post, he began to display a profound interest in the broader aspects of medicine, including socialization of medical practice and economics of medicine. These interests and his wide travels abroad and in the Soviet Union led him to write many books and articles, including *Landmarks in the History of Hygiene* (1956), his most recently published book; *Medicine and Health in the Soviet Union* (1947); *The University at the Crossroads* (1946); *Civilization and Disease* (1943); *American Medicine* (1934); *Medicine and Human Welfare, The Great Doctors, Men and Medicine.* Drawing on the contributions of great literary masters for inspiration, he wrote

(*continued on page 277*)

BOOK REVIEWS

Medical Physiology, Tenth Edition. Edited by PHILIP BARD. St. Louis, C. V. Mosby Co., 1956.

The revision of MacLeod's book embodies the same objectives as the previous editions. The principles of physiology are elucidated in terms of experimental evidence in every field of the subject, producing an indispensable textbook in medical practice. Considerable emphasis is placed on the correlation of the heterogeneous realms of science to medicine. The greater part of the book has been entirely rewritten by experts in experimental physiology. There is extensive elaboration of scientific procedures from other fields of endeavor bringing significant advances to the forefront. The structure of the book remains the same embodying the circulation, respiration, digestive tract, metabolism and nutrition, body fluids, endocrines, neuromuscular, central nervous system, and special senses. The scholarly presentation of each chapter is reinforced with references to the original literature and clarified by tables and illustrations. The book is a veritable find for the probing physician applying principles in everyday practice.—*I. Newton Kugelmass, M.D.*

Current Therapy 1957. Edited by HOWARD F. CONN. Philadelphia, W. B. Saunders Co., 1957. Pp. 731. Price $11.00.

The swift pace of therapeutic advances continues unabated. The many new therapeutic recommendations in this volume reflect newly acquired knowledge of disease processes. Whatever is advocated has been subjected to critical evaluation prior to presentation for everyday practice. The material that is presented unchanged attests to the high caliber of therapeutic armamentaria crystallized in these volumes. The purpose of this edition is to make available the type of treatment especially adapted to a well defined diagnosis. The book abounds in resourceful material that reflects the current thinking of leading authors in various fields of medicine. It offers the practitioner the most effective materials and tools that medical science has thus far attained.—*I. Newton Kugelmass, M.D.*

Epidemic and Endemic Diarrheal Diseases of the Infant. KENNETH T. MORSE. Annals of the New York Academy of Sciences, Vol. 66, Art. 1, 1956. Pp. 230.

This excellent monograph contains discussions concerning the viral and bacterial etiology of infantile diarrheas. Each of its 31 chapters, written by authorities in the field, is amply supplied with appropriate tables and references. This is a volume that workers and students in the field of public health and veterinary medicine may well use to advantage.—*R. J. Reedy*.

PHARMACEUTICAL "DUPLICATIONS" DECLINE. Manufacture of pharmaceutical "duplications" declined from a high of 147 in 1949 to 79 in 1956, according to a survey by Paul de Haen, consultant to pharmaceutical industry. The study also shows 42 new therapeutic agents marketed in 1956, primarily in the ataractic, hypertension, muscle-relaxant, and hormone fields.

DIETARY HISTORIES OF "UPPER MIDDLE CLASS" CHILDREN. Daily intake of vitamin A from plant sources alone averaged three to six times the National Research Council recommended allowance in 64 "upper middle class" children during the first year of life, according to V. A. Beal (J. Nutrition 60:335, 1956). Vitamin D intake was two and one-half times the recommendation, vitamin C intake tending to remain uniform. No evidence of hypervitaminosis A or D was found.

CANCER-TYPE PERSONALITY SUGGESTED. The possibility of a cancer-type personality is being studied, indications being that agitated and unhappy persons may succumb to cancer more quickly than placid persons, says John B. Trunnell (Chief of Experimental Medicine, M. D. Anderson Hospital and Tumor Institute, Houston). He says he has no doubt of the etiologic significance of viruses in cancer, but believes it takes some emotional factor to trigger the virus into destructive activity.

BLOOD HORMONE STUDIED. The mechanism and site of production of a new hormone, erythropoeitin, that controls formation of red blood cells have been established, according to a report in Nature. Produced by the kidney in response to the changing balance between the oxygen demand and supply of the body, the hormone stimulates the bone marrow to make red blood cells, is found in normal blood of human beings and animals.

SPRAY GUN FOR VACCINE SHOTS. An automatic spray gun for vaccine shots, being developed at Walter Reed Army Institute of Research, will be ready for field tests in a few months. The automatic jet injection syringe uses a high speed spray that penetrates the skin in less than a second. Advantages over hypodermic needle: less time lost by recruits, great saving in syringes and needles, no sterilization needed between injections, less discomfort caused.

MARROW TRANSPLANTS USED SUCCESSFULLY. Marrow transplants have been carried out successfully on a small scale in animals and human beings, reports Dr. Shields Warren (Harvard pathologist and adviser to the Atomic Energy Commission, Division of Biology and Medicine). Still in

the experimental stage, such a transplant would enable persons exposed to an overdose of radiation to manufacture healthy blood cells again, could be invaluable in the event of war or in industrial accidents. It is believed that transplanted cells might function for "several weeks," allowing damaged cells to be washed out and replaced by healthy stored cells.

NEW DISEASE SYNDROME OBSERVED. Fever, sore throat, and a generalized, diffuse, finely papular, bright red erythema present over the entire body are manifestations of a new disease entity described by Dr. Mary D. Ames (A. M. A. J. Dis. Child. 93: 110, 1957). Observed in 25 children aged 4 to 12 years and in 5 adults closely associated with them, the new disease lasted an average of three days, there were no complications, all patients were completely well after 10 days. Chief diagnostic problem was differentiation from scarlet fever, German measles, other diseases.

REPORTING SYSTEM ON EFFECTS OF NEW DRUGS. A pilot system of recording for future reference the reactions of many persons to new drugs is being sponsored by the Food and Drug Administration of the United States Department of Health, Education, and Welfare. Reports are being submitted to a central bureau by 11 leading hospitals, and adverse or unusual reactions to drugs will be carefully noted.

TRIBROMOETHANOL PREFERRED IN TETANUS CONTROL. Tribromoethanol (Avertin, Winthrop Laboratories) given in a rectal retention enema is the drug of choice in the sedative control of severe tetanospasm (World Medical Journal 4:29, 1957). Patients who received the drug had three to six hours' restful sleep, on awakening were usually sufficiently relaxed to take food and fluids without nursing help. Dosage was based on body weight, the drug generally being given once or twice every 24 hours.

LUNG BIOPSY PERFORMED IN 120 CASES. Lung biopsy was performed in 120 cases still doubtful after all other tests, reports Dr. Klassen, Ohio State. Procedure was similar to that in liver biopsy; approach was through fourth or fifth intercostal space; blood loss was less than 50 cc.; there were no fistulas due to instillation of chemotherapeutic agents.

FOODS MAY BE FACTOR IN GOITER ETIOLOGY. High amounts of goitrin, a goiter-causative compound, have been isolated in rutabaga, turnip, and certain other vegetables, according to a report by Dr. Monte A. Greer (Portland, Ore.). Although ingestion of vegetables known to contain progoitrin has not yet been shown significant in goiter etiology, it is possible that overconsumption of these foods may prove a factor in the development of goiter in man.

ADVANCED REPORTS FROM CURRENT MEDICAL MEETINGS

This section of the INTERNATIONAL RECORD OF MEDICINE features reports on papers delivered at current medical meetings in the United States and abroad.

Hypoproteinosis in Childhood

Evansville, Ind.—Hypoproteinosis is common in childhood and causes a syndrome characterized by a "won't eat" attitude, gastrointestinal symptoms, pallor, frequent infections, and dental caries, states H. D. Lynch (Evansville, Ind.). These children usually have mostly liquid diets, primarily milk and fruit juices. Despite large amounts of milk, the diets are low in protein. Gratifying relief is seen when protein in the diet reaches more than 15 per cent; also, the children need solid proteins.

Unfortunately, physicians have little interest in nutrition, states Dr. Lynch. There are few departments of nutrition in medical schools. Subminimal protein deficiencies thus do not attract attention; symptoms of hypoproteinosis are not usually recognized, and their common cause is overlooked. Correction of the condition requires more than just advice. The mother must be taught to make the child take more protein. Adequate laboratory tests are needed—there are none for protein deficiency. In many countries, proteins are not always available. This is not the case in the United States, and psychologic factors enter the picture here. The proper feeding of a child is a long-term problem.

A sudden deflection in rate of gain after the first year has a physiologic effect on appetite. The child's growing awareness of his status as a human being has added psychologic effects on appetite. Mothers, who equate feeding with expressions of love, cannot adjust to this. They feed the child anything it will accept, which leads to its eating too many sweets, too much beverage. Solid foods must be chewed, requiring effort by the child. Misguided, fanatic enthusiasm for a quart of milk a day complicates the protein problem. A child who has too much milk usually develops a taste for sweets and does not eat enough protein later. The preschool child does not need three meals a day, says Dr. Lynch. The small child should be allowed to get hungry enough to enjoy solid protein. At ages 1 to 6 protein intake is lowest, but needs are greatest, he adds.

(Presented before the Conference on Protein Nutrition, sponsored by the New York Academy of Sciences and E. I. du Pont de Nemours & Co., Inc., New York City, March 1–2, 1957.)

The Application of Thin Sections to the Study of Renal Disease

New York City.—The use of ultrathin tissue sections permits study of fine structure hitherto not possible except by use of electron microscopy, according to J. Churg and E. Grishman (Mt. Sinai Hospital, New York City). Sections in the range of 0.5 to 1 μ thick are cut by means of a special microtome and embedded in celloidin. The thin sections permit higher microscopic resolution and hence greater magnification (to times 2000). Utilizing this technique, Drs. Churg and Grishman studied various renal diseases. In intercapillary glomerulosclerosis (Kimmelstiel-Wilson disease), the intercapillary spaces are filled with a fibrous hyaline material. In acute glomerulonephritis, the intercapillary spaces are edematous and contain cells and fibers of endothelial origin. Lupus erythematosus primarily involves the basement membrane, which is markedly thickened by the deposits of lupus material. In chronic glomerulonephritis, routine sec-

tions reveal what appear to be fibrosed structureless glomeruli. Thin sections, however, show that the capillaries are still present and distinct, but are greatly collapsed. This technique promises to be extremely valuable in the study and clarification of pathophysiologic mechanisms of renal diseases, say Drs. Churg and Grishman.

(Presented before the Mt. Sinai Hospital Research Club, New York City, Feb. 27, 1957.)

A Re-examination of Water Diuresis

New York City.—An extraneurohypophysial antidiuretic mechanism may be present in certain disease states, according to A. G. White (Mt. Sinai Hospital). Water-loading experiments, in which human subjects are given 1500 cc. of water orally, indicate that a peak diuresis of 15 cc./minute is reached in 90 to 120 minutes. In 180 to 210 minutes, 90 per cent of the load has been excreted. The response to water loading is explained by an inhibition of antidiuretic hormone in response either to hemodilution or to stimulation of volume receptors. At the peak of the curve of diuresis antidiuretic hormone is again secreted, thus slowing down diuresis. Plotted logarithmically, the curve of diuresis is a straight line. In diabetes insipidus there is a peak in the curve of diuresis at 6 cc./minute. There is no alteration in glomerular filtration rate or abnormality of solute excretion in this condition. Dr. White, therefore, evokes an accessory antidiuretic mechanism to explain these findings.

(Presented before the Mt. Sinai Hospital Research Club, New York City, Feb. 27, 1957.)

The Overweight Adolescent

Boston, Mass.—The public and the physician are too preoccupied with the question of excess weight, states J. Gallagher (Children's Hospital, Boston). The overweight adolescent who diets is taking in fewer calories, but also less protein, than his thinner friends. The physician must try to determine the degree of fat in excess weight and the degree of activity of the adolescent, and then attempt to maintain the protein level. It is erroneous to assume that the overweight adolescent is consuming enough protein, and we must try to raise the protein level.

Adolescence is a time of strenuous physical activity. The physician must remember the significance of this activity and the implications of inactivity, rather than focusing on fatness or thinness. The physician should concentrate on maintaining high activity and a reasonable protein level and on the reason for inactivity, rather than on lowering caloric levels. We should consider the whole patient, with an interest in producing a healthy adult. The adolescent must be followed for several years to determine the optimum protein level, says Dr. Gallagher.

(Presented before the Conference on Protein Nutrition, sponsored by the New York Academy of Sciences and E. I. du Pont de Nemours & Co., Inc., New York City, March 1–2, 1957.)

Enrichment of Foods with Protein

New York City.—Nutrition is a very important and basic factor in the high mortality rate in the 1 to 4 year age group in technically undeveloped areas and countries, reports James Hundley (Food and Agricultural Organization, United Nations, New York City). He gives as the approximate order of usefulness of certain food products as diet supplements: (1) fish flour, 70 to 80 per cent protein—only small supplementary amounts are needed; (2) soy products—their biologic value is unique among vegetable products; they are very close to animal protein in value; (3) peanut flour; (4) sesame flour; (5) cottonseed flour; (6) coconut protein.

Nitrogen equilibrium can be obtained with certain protein foods, says Dr. Hundley. Nitrogen retention can sometimes be enhanced by increasing the use of nonessential amino acids. He finds that just as great a

nitrogen balance response was obtained with the nonessential amino acids as with the essential ones. In a low protein diet any protein might help restore a positive nitrogen balance—age group and previous history may be factors in this. In using protein supplements in human subjects, one must consider the adequacy of the rest of the diet, not only proteins, Dr. Hundley adds.

(Presented before the Conference on Protein Nutrition, sponsored by the New York Academy of Sciences and E. I. du Pont de Nemours & Co., Inc., New York City, March 1–2, 1957.)

Hodgkin's Disease of the Female Sex Organs

Berlin, Germany.—Hodgkin's disease is much rarer in women than in men, the ratio being about 7 to 3, states Karl Heinz Bruntsch (Frauenklinik of Berlin Free University). Localization in the female sex organs is extremely rare—only 34 cases have been described in the literature. Most of these cases were verified by autopsies, and the disease was found to involve the uterus in 14 patients, the ovaries in 16, tubes in 8, parametria in 13, and the vagina in 3. Clinically, the disease is often combined with tuberculosis. Fever, general fatigue, and pruritus are among the initial symptoms; the fever is frequently not of the Pel-Ebstein type.

Blood counts are not characteristic, showing a lymphocytosis or polymorphonuclear leukocytosis, occasionally an eosinophilia. There is frequently amenorrhea when the sex organs are involved, but there may also be an uncharacteristic history of vaginal bleeding. Pain may be a prominent feature if the parametria are involved. The differential diagnosis of tuberculosis and/or of ovarian tumors is always difficult except in those cases where inguinal nodes are enlarged and can be biopsied.

In these 34 cases, the diagnosis was made 7 times by laparotomy, 4 times by biopsy, and 22 times by autopsy. In therapy, high voltage roentgen rays as well as cytostatics were used as palliative and symptomatic treatment.

Dr. Bruntsch presented two case histories. (1) A 22 year old white woman, with a history of lower abdominal pain of two weeks' duration, was admitted to his hospital. There was a history of pulmonary tuberculosis. Physical examination showed tender, about first-sized infiltrations of both parametria, and a temperature of 38 C. A tentative diagnosis of tuberculosis of the parametria was made, and the patient was treated accordingly. No results were seen, however. Laparotomy was done after five weeks. A biopsy was taken and the diagnosis of Hodgkin's disease was made. In spite of cytostatic therapy, the patient died six weeks later. Autopsy showed involvement of the parametria and retroperitoneal, para-aortic lymph nodes, as well as nodes of the hilus of the lung. (2) In this 52 year old white woman the family doctor had found hard infiltrations of both parametria two years previously. Biopsy established the diagnosis of Hodgkin's disease. There was also a history of pulmonary tuberculosis. The patient was admitted in March 1956 because of a vaginal hemorrhage and was given 2400 mg. of radium and also roentgen-ray therapy, 8000 r. Cytostatics were also used. She died in October 1956 of rheumatic heart disease. At autopsy, a remarkable improvement of the infiltrations of the parametria was seen, which was attributed to the intensive irradiation.

(Presented before the meeting of the Berlin Gynecologic Society, Berlin, Germany, Feb. 22, 1957.)

Transaminase Activity as a Sensitive Indicator of Liver Necrosis

Philadelphia.—Serum transaminase determination is one of the most sensitive tests of liver necrosis available, reports Robert Donato (Jeanes Hospital, Philadelphia). In studies on mice, rats, and human beings, Dr. Donato found a very high correlation between the degree of liver damage and serum transaminase levels, even in minimal damage

undetectable by other tests. The sensitivity definitely exceeded the alkaline phosphatase or serum cholinesterase determinations. Animal experiments included liver damage due to carbon tetrachloride and mouse virus hepatitis. Pathologic results were compared to transaminase determinations and found highly comparable. Levels less than 100 units indicated mild damage; more than 350 units, severe damage. In obstructive jaundice, the increase has no relationship to, and is not due to, the increased blood bile products. The sensitivity of the test in human beings was indicated by the positive results in chlorpromazine hepatitis with characteristic minimal cellular damage.

(Presented before the Pathologic Society of Philadelphia, Philadelphia, Feb. 14, 1957.)

Natural Selection Theory of Antibody Formation

Chicago.—Theories of antibody formation are discussed by David W. Talmadge (University of Chicago). He says that the antigen template theory now held by most immunologists presents more theoretical problems than it solves and that the natural selection theory of antibody formation fits the facts in a more plausible manner. The antigen template theory postulates that an antigen invades the cell and within the cell starts "stamping out" antibodies in its image. There are two main difficulties with this theory. (1) There must be some mechanism by which the antibody-producing center recognizes "native" protein, otherwise there is no reason that all the proteins should not act as antigen templates and start stamping out autoantibodies. (2) The rate at which antibodies can be seen to be produced is so great as to make the rate of formation by the antigen template formidable. The natural selection theory would avoid the difficulties by postulating that the antibodies are already present in the body. The antibodies exist in the state of equilibrium. With the equilibrium set up between the antibodies in the cells and those in plasma, when antigens are introduced they combine with antibodies of the plasma, upsetting the equilibrium. This stimulates the antibody-producing element *within* the cell to produce more of that particular antibody.

There are two interesting points at variance with immunologic theory. (1) Production of antibodies is *not* caused by the introduction of antigen, but by combination of antigen and antibody. (2) The essential reaction takes place *outside the cell.*

Dr. Talmadge discusses the cause of antibody response being knocked out when massive doses of antigen are given to a young person. He postulates, as a possible cause, that introduction of antigen in very large amounts would permit entrance of antigen into the cell, thus upsetting previously operating equilibria and preventing the operation of the antibody-forming center. He concludes by saying that members of every branch of biologic science have accepted natural selection except the immunologists.

(Presented before the Zoology Club, University of Chicago, Chicago, Feb. 21, 1957.)

Studies on Tuberculosis

Washington, D. C.—Most new cases of tuberculosis appearing today represent the development of clinical disease in persons infected many years ago when tuberculosis was more prevalent, reports Edward T. Bloomquist (Chief of the Tuberculosis Program of the United States Public Health Service). He adds, "We estimate that there are at least 50 million adults in the United States today potentially at risk of developing tuberculosis from an infection early in their lives." Dr. Bloomquist says that epidemiologic studies have justified the belief that the period of highest risk of developing tuberculosis is immediately after an infection, "but we were wrong in assuming that the danger was practically over after this period had passed." Some advice for occupational physicians, he says, is that close watch must be kept of persons over 35 and that future planning of industrial health

programs should include consideration of periodic roentgen-ray examinations and follow-ups of older workers.

Dr. Bloomquist also relates details of the Public Health Service's current survey to determine whether isoniazid, administered in prophylactic doses, can prevent new tubercular infections and the breakdown of old infections. Both exposed and nonexposed household are being studied. Households are being assigned randomly to isoniazid or placebo groups and being kept under close observation by local health departments, he says. Each contact is tuberculin-tested and roentgen-ray pictures are made at the beginning and at the end of a year of prophylaxis. "If isoniazid is effective in any one of the areas under investigation, either in preventing infection, in preventing new infection from progressing to clinical disease, or in eradicating old subclinical infection that may flare up in endogenous disease, we will have found a new practical approach to the control, prevention, and even eradication of tuberculosis," Dr. Bloomquist says.

(Presented before the American Academy of Occupational Medicine, Washington, D. C., Feb. 13–15, 1957.)

Value of Natural Childbirth

Baltimore, Md.—While natural childbirth has made important contributions to obstetrics, there are indications it is being oversold by some enthusiasts, in the belief of Nicholson J. Eastman (Johns Hopkins Hospital, Baltimore). The concept has been promoted to the point where some women feel they are inadequate unless they go through labor and delivery without any form of pain relief or assistance from the physician, he points out. Dr. Eastman says he does not want to minimize the values gained from attending classes to learn calisthenics, breathing exercises, and something about the physiology of pregnancy. The attention the patient receives and the leisurely tempo of the class can be soothing and relaxing. But on the other hand, he says, natural childbirth has come to mean to some women "a certain glory and exhilaration to be achieved by a 'do-or-die' determination to go through with labor without any form of pain relief. Their greatest fear for weeks is that they can't go through labor as the book and their instructors say they should, and that they will have to beg for relief," Dr. Eastman continues. "After long weeks of reading, exercises, tutelage, and planning such women are heartbroken by their failures. The psychologic effects of such failures should not be overlooked," he adds.

Dr. Eastman stresses the "team approach." He credits antepartum care with playing a major role in the dramatic fall in maternal mortality in the United States (58 deaths per 10,000 live births in 1935 as compared with 6 in 1956). He notes that it was the nursing profession that first conceived and introduced antepartum care in 1901. The sharp reduction in eclampsia has been in large measure the result of more intelligent nutrition, he adds. "But the role of the nutritionist is much broader than this," Dr. Eastman continues. "Recent studies on women who were interned in German prison camps in World War II, and who suffered extreme starvation, reveal that these same women, years later, while having apparently regained their weight and appearing to be in good health, are giving birth to mongoloids and other infants with congenital malformations at a frequency 5 to 10 times that occurring in the population at large. In other words, the primordial germ cells of these women were irreparably damaged by starvation. This shows that complete maternity care, including good nutrition, extends back much further than the onset of the present pregnancy and, indeed, entails proper care of the expectant mother from childhood."

Dr. Eastman cautions against any "glib complacency" about the hard-won somatic gains against maternal death. "Enterprises never stand still," he says. "They either go forward or go backward, and as I read of the routine conduct of delivery with un-

sterile gloves, of routine manual removal of the placenta, and of other time-saving short cuts, I wonder whether this complacency is not giving rise to a certain laxity in our standards and, by the same token, to a relaxation in that vigilance that underlies safe delivery.

"Many a young man today goes through complete training in obstetrics and gynecology without witnessing a single maternal death, and he may well get the notion that this could never happen to him. But it will happen to him, and will happen more frequently everywhere, unless everlasting alertness and vigilance are exercised, not only in the details of obstetric care but in making certain that the many educational disciplines that have led to our present high standards continue their work."

Dr. Eastman notes that there are still some 2000 maternal deaths a year. The triad of hemorrhage, toxemia, and infection still are first as causes. The fourth great cause is rheumatic heart disease, and the fifth anesthesia, which is responsible for about 200 deaths. Among the specific causes of anesthetic deaths in obstetrics, vomiting with aspiration of vomitus is perhaps the most frequent, Dr. Eastman says. A recent investigation at Guy's Hospital, London, has shown that the administration of intravenous apomorphine hydrochloride is an effective preanesthetic medication to encourage vomiting and ensure an empty stomach.

(Presented before the First Illinois Congress on Maternal Care, Springfield, Ill., Feb. 13–15, 1957.)

New Concept of Therapy for Allergies

Paris, France.—A striking new concept of therapy for all allergies—still experimental, but which already has produced dramatic results—is described by Bernard N. Halpern (Paris, France). The idea is to remove from the body the excessive amounts of histamine found in allergic persons, according to Dr. Halpern, the discoverer of antihistaminic drugs. With histamine reduced to normal or even subnormal levels, allergic symptoms from antigen-antibody reactions tend to disappear.

Dr. Halpern has developed a cyclin, aromatic compound he calls 1935 L, which causes the kidneys to remove excessive amounts of histamine from blood. With injections of 1935 L, the physician administers cortisone to block the resynthesis of cellular histamine. Thus, the patient tends to remain allergy-proof, he explains.

Tests on human beings, begun only a few months ago, have shown improvement in 60 patients, he says. One patient, who had had severe hives, has remained symptom-free since he began to receive periodic injections last July. "We are touching on one of the secrets of this biochemical disease," Dr. Halpern says. "The therapy is based on the fact that the allergic man releases more histamine into his blood than the average man. This histamine stays in his blood longer and is more slowly destroyed." Histamine, the Parisian explains, is part of the defense mechanism against infection and the therapy does not eliminate it from the body. It merely prevents an oversupply in the blood. The famed allergist is seeking improved "histamine liberator" compounds.

(Presented before the 13th Annual Meeting of the American Academy of Allergy, Los Angeles, Feb. 4–6, 1957.)

Otitis Media in General Practice

London, England.—Before the introduction of sulfonamides and antibiotics, acute otitis media was a very common complication of upper respiratory infections and specific fevers, reports George Frances Abercombie. A mastoid operation became necessary in perhaps 10 per cent of cases. Myringotomy was extensively practiced, but the results were disappointing in that the mastoid rate was not appreciably reduced. Recent surveys from general practice show that although the condition is just as common as formerly, myringotomy is no longer done, and a mastoid operation is very seldom required. The incidence of acute otitis rises

up to the age of 5 or 6 years and then falls sharply. Today 80 per cent of patients receive sulfonamides or antibiotics in some form—oral, parenteral, local—and residual defects are not frequent or serious.

(Presented before the Royal Society of Medicine, London, England, Feb. 1, 1957.)

Prostatovesiculitis

Copenhagen, Denmark.—The etiology and clinical features of prostatovesiculitis are discussed by Oluf Poulsen (Copenhagen County Hospital). Treatment is usually conservative, but the disease is very resistant, and surgical treatment sometimes is necessary. Cases ending fatally have been described by Brocks from the same department, 1 from a prostatic abscess, another from urethral stricture and urinary infection. In addition, 2 patients have committed suicide during the mental depression often seen in connection with the disease.

Fifty-seven patients were seen in one of the surgical services of the Copenhagen County Hospital during 1936–1954. Two were admitted with symptoms of acute abdomen. Of the anamnestic factors the following should be noted: 14 had had gonorrhea and 8 various traumas. No less than 21 had unstable sexual relations. Seventy-five per cent had various complaints concerning the urinary tract, most frequently dysuria or discharge from the urethra. Forty-eight had pains that were projected in various directions, to the abdomen, the pelvic floor, the groins, the testes; 34 had sexual symptoms of various kinds, including 8 cases of hemospermia. Four had symptoms from the joints, and 2 had Reiter's disease. Most noteworthy was the fact that no less than half the patients had neurasthenic symptoms. In 8 cases the fertility was studied and in 7 a reduced fertility was found. Sedimentation rate was above the normal in 33 per cent.

Of 54 patients treated conservatively, 12 were cured without symptoms, 7 considered themselves cured with intermittent symptoms, 23 were not cured but had only intermittent symptoms, and 12 were not cured and had persistent symptoms. Dr. Poulsen feels that infection is less important than retention. Antibiotics have hardly any effect. Repeated expression, diathermy, and testosterone have the best effect. Nine patients were operated on with removal of the seminal vesicles transperineally. Six are cured, 2 are greatly improved, 1 complains of insufficient erection. Fertility is greatly reduced in all cases. It is concluded that operation may be offered if fertility is of no consequence to the patient.

(Presented before the Danish Surgical Society, Copenhagen, Denmark, Feb. 9–10, 1957.)

In Memoriam: Henry E. Sigerist, M.D.

(*continued from page 269*)

"Thoughts on the Physician's Writing and Reading" for the Symposium on Medical Writing, INTERNATIONAL RECORD OF MEDICINE, October 1955.

Resigning from his position at Johns Hopkins in 1947, Dr. Sigerist returned to Switzerland to work on a monumental eight volume history of medicine, the first volume of which, *Primitive and Archaic Medicine*, was published in 1951. Although handicapped by serious illness, he had hoped that he might continue this work at least as editor—a hope that was not to be fulfilled by himself but that may be accomplished by his pupils.

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